

Canadian Computer **Wholesaler**

THE MONTHLY FOR RESELLERS

September 1996 Vol.2 No.5

LAB REPORT

15 ENTRY-LEVEL SYSTEMS TESTED

The Razorification of Printers
Building WANs Painlessly
Clean Power for Smoother Computing
Hi Fi Sound for the Desktop
Optical Disk Systems need VARs



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The award-winning GVC modems, available in a wide variety of models and speeds are an ideal choice for surfing the cyberspace. In fact, these modems are used by many of the Internet service providers themselves, making GVC "Canada's Internet Choice". GVC has recently introduced the new VFM-288 voice fax modem series. Like the FM-288 series of fax modems, the VFM-288 series features a 28,800 bps V.34 modem and 14,400 bps send/receive Group III fax that provides error free throughput of up to 115,200 bps with compression and is compatible with all V.34 modems. In addition the voice feature operates as a "virtual respondent" that greets callers and allows them to select from a multitude of fax/voice mailboxes that can record or play

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Solutions in Computer Distribution



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From the Publisher

Biking and Computing

I am a bike enthusiast. Not the kind of biker who wears tight shorts and rides racing bikes, more the kind who rides a "hybrid" (half mountain bike, half 10-speed) to work. I like bikes for some of the same reasons that I like computers. They are useful tools that have the potential to change the world in a small but good way: bikes because they let you exercise while traveling and eliminate the air pollution you would create if you drove your car, and computers because they allow you to see information in new ways and come up with new solutions to problems.

Recently, as it often happens when another hobbyist tells a story to one of our children, I was in buying a bike from my local bike store. Over the last decade, with herbicides and the occasional axle tube needing replacement, I have purchased at least five bikes from this store. They are friendly and knowledgeable and take a really well-earned approach to computer sales. As I thought about it and talked about it with the store manager, the analogy rolled out fully, consciously and it occurred to me that the model holds true as a number of areas.

One big purchase

While buying a rifle (forget the gun) for both bikes and computers usually starts with one big purchase. With computers, it is your PC. With bikes, it is the basic one-a-bicycle.

Lots of parts to buy regularly

Once you have made your initial investment, the next step is outfitting a software upgrade, peripheral or the computer itself, and locks, fenders, lights, bells, tires, wheels for bikes. Stock and services are key to making sales in this department.

Need for regular service

Bikes by their nature suffer from wear and tear and need to be serviced at least annually, often more frequently. With many lesser moving parts, computers need to be serviced less often, but more from technical change, software complexity and the addition of peripherals. In both cases regular visits to the service department give plenty of potential for "up-sells" and exposure to new models.

Knowledge transfer

Bikes and computers are both accessible on a number of levels. You can get into them at a very technical level. There are both bike and computer enthusiast magazines. There are user groups and bike clubs to offer support and knowledge transfer to consumers on both product ranges.

Specialty area hits the mainstream

The bike like the computer, has gone through an extensive popularity boom in the past 10 years. Bicycling used to be the realm of an elite group of aficionados just as computers were prior to the advent of the PC. The big motivator for bicycles was the development of the 10-speed and then the mountain bike. Computers had the original Apple II and then the IBM PC to launch a new level of interest that took computers out of the realm of the nerds.

Rapid technology change

Both product areas have been hit by huge changes in technology that make the products more available to end users. Readers familiar with the computer industry will know well what has gone on in the computer industry. My bike vendor tells me that the past five

years have brought more changes in the bicycle than the previous 50 years. Ironically in the bike industry some of these changes have been inspired by computer-aided design done on PCs.

So what?

I thought you might ask that. What does this comparison do for computer retailers? The professors at my old business school loved a good analogy from which they could develop strategies. Check out the successful bike vendors in your area. Look at what they do and what makes them winners and see if some of these strategies will work in your area. Obviously you have to adapt the ideas to your specific business, but think about what has worked in three areas.

Specialize

Bike bikes and computers cover a wide spectrum of products, all specialization in the marketplace is important. The guys I buy my bikes from don't stock the lowest high-end mountain bikes; they cater to kids and commuters like myself. Know what your customers will want and deliver it to them consistently.

Regular marketing

Bikes are a very seasonal product in most of Canada. Computers, fortunately, are more year-round, though they have some obvious selling seasons as well. Back to school specials, Christmas events, spring cleanings, etc. are all good excuses for seasonal marketing. Look for specialized publications that give you a large number of potential customers, as well as local advertising vehicles that bring a strong geographic market. Think about whether your market is likely to be a neighborhood, or if you focus on a more specialized product line, the music store or region.

Know your market and clientele

Friendly knowledgeable customer will keep me coming back to my favorite bike store. The same happens with computers. I will go back to a salesperson who knows what he or she is talking about, is easy to work with, regardless of price. To me, there is a sense of getting in my car to drive to a super store versus having to have a usually worse more than the hassle of going outside my area. I just want decent service and a feeling that I am not being overcharged. Building sales skills is an owner's ongoing responsibility to his or her staff and customers.

Good service department

A good service department probably does more to maintain a long-term customer than anything else a store can do. Convenience hours, fast turn around, doing things at reasonable prices, and throwing in inexpensive parts or add-ons for free all go a long way to building the customer bond. My bike store will often give me products under \$5 for nothing, because they see the big picture with me. They will give me a new brake and lose another \$100 to \$400 bike.

Turnover costs

Obviously the comparison is not perfect. Big differences do exist between these two retailing entities. Rapid turnover of technology is a much more severe problem in the computer industry because of short product life cycles. Perhaps fresh fruit rotting would be a better comparison. Still, looking at how other businesses solve their problems can be a useful exercise if you are just starting out or find your business in need of a fresh look to get sales growth happening again. The big lesson I take from the bicycle store analogy is that both the computer and bicycle retailing businesses are a long-term proposition and repeat customers are worth much more than one shot deals.

Leave the store! **DOH**

Douglas Alder
Publisher



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Gainberry introduces Pentium 200 performance

Gainberry Computer Products Inc., a leading specialist in CPU upgrades, introduced the Booster 200/180A and B series for upgrading Pentium 66MHz/90/100/133/133V/150/166 MHz systems to Pentium 200 MHz. Gainberry is the only company which provides this level of performance upgrade for the Pentium.

Boosters are based on a true 200MHz Pentium processor built on Intel's 35 nm core processor technology. Their smart voltage adaptor maintains the motherboard voltage to 5.5/2.9 volt. All Boosters include a heatsink and a fan.

Booster's chip for chip replacement mode allows any Pentium user to easily replace the old chip with the upgrade one. The new CPU instantly provides maximum results in both speed and performance. This technology is designed to maintain the performance of software applications and operating systems, especially Windows 95.

Booster comes with an easy-to-follow installation manual, a 1-800 technical support line and one year warranty.

Manufacturer's suggested retail price for both Booster 200/180A and Booster 200/180B series is US\$1,099.00.

3Diabs Releases QuickDraw 3D Drivers for New Permedia 3D Processor Chip

3Diabs, Inc. announced the availability of Permedia drivers for the QuickDraw 3D and QuickDraw 3D RAVE APIs from Apple Computer, Inc. Permedia is 3Diabs' second

generation consumer targeted video that delivers integrated 2D/3D and video acceleration.

Pentium-based boards accelerate all aspects of 2D and 3D graphics operations on the Power Macintosh and will be available for under US\$250. Permedia delivers 30 million blue-on-black on-screen-tapped pixels per second. All rendering calls from the Apple APIs will take full advantage of 3Diabs' hardware pixel acceleration, for three to five times increased performance.

The built-in type wrapping used in Permedia ensures that any PC accelerator using 3Diabs' silicon can be easily brought onto the Macintosh platform, and vice versa. Permedia is shipping now to select OEMs and will be available on Macintosh-compatible boards during the third quarter of 1996.

Data General to Resell and Support SCO UnixWare 2.1 on AWEON Servers

Data General Corporation announced that it plans to resell, distribute and support SCO UnixWare 2.1 on its AWEON servers. SCO UnixWare 2.1 went will be shipping on the SCO certified AW 2000 and AW 3000 systems. Shipment on other AWEON servers is expected in October.

Among the early adopters of SCO UnixWare 2.1 on Data General's AWEON platform will be the Ministry of Defence in the United Kingdom, Pacific Access, a leading provider of solutions to the telecommunications industry, and HBD Inc., one of the primary suppliers of healthcare industry solutions.

Data General also intends to resell UnixWare through third-party channels including OEMs and VARs. The complete

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also will promote SCO UnixWare in conjunction with SCO at trade shows, user conferences and through special promotions and programs.

Data General Canada and Great Plains Software Form Alliance

Data General (Canada) Company and Great Plains Software have formed a strategic alliance that will give resellers the opportunity to market a complete hardware and financial software solution based on the Microsoft Windows NT Server and Microsoft SQL Server products.

The strategic relationship which includes marketing, sales and support initiatives, centres on Great Plains Dynamics C/S++ a financial application for Windows NT and SQL Server. Data General's commitment to the Microsoft Windows NT platform and expertise in high-availability server technology are key to the new relationship.

Data General's line of high-availability Axiom servers and CLARiON disk arrays, offer resellers and hubner server technology with simple and seamless support for Microsoft Windows NT and Microsoft BackOffice. Great Plains Dynamics C/S++ offers a full complement of core financial applications, giving users powerful, integrated control over critical processes. Applications include Financial Series, Sales Series, Payroll Series, Foundation Series, Purchasing Series and Inventory Series.

CLARiON to ship 9 GB Disk Drives

CLARiON, a business unit of Data General Corporation announced an enhancement to its industry leading CLARiON Series 160, 190, and 2900 storage subsystems — the availability of 9 GB/3.5" disk drives. With the new 9 GB drives, comes the ability for 720 GB of storage to be delivered in less than 5 square feet of floor space — unmatched density for the storage subsystem market.

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- Protected parity handling algorithms

3Diabs' GLINT 3D Accelerator certified for Softimage 3D 3.51

3Diabs, Inc. announced that its reference board design for the GLINT® 500TX and GLINT 300X 3D graphics accelerators, including the GLINT Delta™ geometry co-processor, are among the first 3D hardware accelerators certified by Microsoft® for use with Softimage® 3D and Softimage 3D Extreme 3.51.

3Diabs recently shipped the GLINT 500TX with hardware texture mapping support. Combined with the optional GLINT Delta geometry co-processor, GLINT 500TX accelerators provide OpenGL®-compliant rendering, texture-mapping, and geometry processing on one PCI board for under US\$2,000.

The GLINT chip family is currently the only silicon shipping with an OpenGL, licensable Client Driver, providing highly-optimized and fully-compliant OpenGL performance, integrated seamlessly with Microsoft Windows NT. OpenGL is fully-supported and endorsed by Microsoft as the high-end 3D API for CAD, imaging and multimedia authoring. The GLINT drivers for Windows NT and OpenGL are available on Intel®R, Alpha®, MIPS® and PowerPC® processors. All 3Diabs drivers automatically detect and take full advantage of GLINT 300X, GLINT 500TX and the optional GLINT Delta.

Pin-compatible with the first-generation GLINT 300X, the GLINT 500TX can be used singly or in parallel to increase 3D performance up to 3 million Gouraud shaded, Z buffered, 32bit color, 25 pixel polygons-per-second.

GLINT 500TX's unified graphics pipeline also provides 3D windows acceleration and full support for video texture-mapping, including digital video effects. When used in an Intel Pentium® Pro processor-based system, the GLINT 500TX delivers OpenGL-based application performance to rival Silicon Graphics® high-end desktop workstations.

Apple colour inkjet fits in briefcase

Apple Canada's new Colour StyleWriter 2200 is a high-quality colour output printer that's small enough to fit in a briefcase. It weighs just over three pounds and measures less than 12 inches across and 2.2 inches high. Features such as "Desktop Printing," "2-, 4-Up Printing" and "Watermark" come standard.

It ships with a colour cartridge that has 360 by 360 dots per inch (DPI) colour and one black printing. The ink is water-resistant

and can print a colour page in under three minutes. A high performance black ink cartridge provides 720 by 360 DPI edge smoothing technology for crisp text output in both mode or up to five pages per minute. Interleaved output is standard. A 30 sheet paper feeder is built-in and the printer handles plain, coated or glossy paper, transparencies, back-print film and envelopes. The printer offers 64 TrueType fonts.

The QuickDraw GX is supported. The printer also supports ColourSync 2.0, which provides the closest possible match between colours viewed on screen and colour from a printer.

An optional Nickel-Metal Hydride battery is available. With the battery installed, the Colour StyleWriter 2200 weighs only 4.2 pounds. When battery powered the user can print approximately 300 pages between charges. An optional external AC adapter is also available.

The Colour StyleWriter 2200 has an estimated street price of \$609 and the optional Nickel-Metal Hydride battery has an estimated street price of \$129.

IMSI Fastest Growing Productivity Software Company in U.S.

Based on data published on the 100 largest PC software companies by market research firm PC Data, IMSI was the fastest growing productivity software company in the U.S. retail market over the past six months.

According to PC Data, the company achieved an increase in retail revenues of 79% during this period, while its ranking among all software companies in U.S. retail sales jumped from number 96 to number 38. PC Data also verified that IMSI's TurboCAD 2D/3D was ranked the number one best-selling CAD software in the US retail market in May. Additionally, Masterplots 35,000 Premium Image Collection increased its U.S. retail market share from 3.3% in March to 11.7% in May, placing it among the top three vendors in the clip-art market, and FontTool Gold, IMSI's format automation product, continued to hold its number one position in the U.S. retail format software market.

Novell IntranetWare for intranet and internet

Novell's IntranetWare builds on the distributed servers found in NetWare 4.11 (code named Green River) and integrates new intranet and Internet technologies, including a Web server and browser, a gateway between industry-standard TCP/IP and

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Good Vibrations:

Studio Quality Sound On PCs Becomes A Retail Commodity

by Jeff Evans

One often overlooked part of PCs is their audio capability. The latest Pentium processor, or version of Windows, the latest fast, high capacity hard drive, SX CD-ROM drive, cache RAM, you name it—almost every other component of the average retail PC system gets more coverage in the trade press, and more attention from customers, than the PC's audio system. Yet, audio is a key part of the total multimedia experience which has made PCs more attractive in the home and educational markets. Computer resellers can benefit by taking the time to get up-to-speed with current sound technology, and incorporating it into the advantages of a good PC audio system in their sales efforts. Those who do will reap the rewards that go to resellers who differentiate their products from the competition.

Familiarity Breeds Contempt

Although the basic PC motherboard typically comes with only the most rudimentary sound generation capability—a small speaker that makes crude "beep" and "bloop" sounds to accompany basic system operations—virtually every PC sold on today's market has a 16-bit sound card installed in it, allowing users to play CD-quality audio sound from their PC, and typically also allowing high quality sound capture on the computer. Creative Labs, one of the pioneers in sound card technology, became the dominant supplier of sound cards to the PC market in the 1980's, and is doing so, *à la de facto* standard for sound cards with its Sound Blaster line. "Sound Blaster compatible" became the rallying cry for other sound card makers, who found that sales increased once they had products that conformed to the market leader's standard. Now, it is rare to find a

desktop PC, even the cheapest, that doesn't come with a "16-bit Sound Blaster compatible" audio capability. Even most current notebooks have Sound Blaster audio capability included. However, this standard does not mean uniform quality.

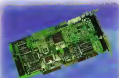
Garbage Out...

In the fight for cost reduction, many vendors include poor quality speakers with their PCs, making much of the potential quality of the sound card. If a reseller trains sales staff to identify customers who want or need good audio playback and make better quality speakers available, some extra, higher margin business can be done appealing customers to better audio speakers. Creative's largest PC vendor, Compug, has acknowledged the importance of audio as a selling feature by incorporating state of the art sound cards and Harmon JBL speakers in its new retail PC line.

Once a reseller begins to consider such expertise as a potential selling and profit center however, then some questions arise. For example, what's the market for PC audio products?

Plain Vanilla: Playback

Most PC users are only interested in audio playback from various software titles, especially CD-ROM titles, especially games. In many cases, a generic Sound Blaster audio card and low to mid level quality speakers is fine for the customer. However, a large segment of the PC buyer market are knowledgeable users of consumer electronics. CD stores



systems, and large format TVs with good audio features. These customers are more discerning and knowledgeable—they aren't satisfied with lousy, poor quality sound. A smaller segment are interested in musical composition and performance. Other groups want to do audio recording, operate a speakerphone/answering machine system on their PC, or operate a DSSD (digital) system, which allows them to combine voice phone with data transmission over a modem. As well, some users want voice recognition capability, and some want to author multimedia presentations and software. All of these diverse needs offer a potential market for specific audio components.

Making Waves: Synth Cards and Daughter Boards

Even many mainstream software titles are capable of much better quality sound output if the computer they are being played on has not just CD-audio playback capability

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but also music synthesis capability. The audio hardware that supports this higher quality of synthesized sound, so-called 'synth' or synthesizer sound cards, have chips which can generate 16-bit, multichannel playback on all 16 MIDI (Musical Instrument Digital Interface) channels. Many of these FM synth-based Sound Blaster compatible cards have a connector for attaching so-called 'daughterboards' that can create 'wetable' sounds which give very realistic sound output, mimicking live instruments or voices performing. A wide variety of the major audio equipment makers offer these daughterboards, such as Roland (SCD-150 and SCD-100B daughterboards), Creative Labs (Wave Blaster daughterboard), Emerson (SoundSpace DS daughterboard). The combination of a decent synth card, a wettable daughterboard, and good quality speakers can make a huge difference in the presentation of audio from a PC. Vendors who want to gain an edge in the retail market would be well advised to have a high quality audio system available to do demonstrations to customers, and to be able to supply high quality audio components to customers who need them.

Audio Peripherals: How Many Products To Carry?

In the quest to control inventory, most retailers are properly reluctant to take on a large number of low-volume products. Consequently, rather than add peripheral devices such as recordable CD-ROMs, syn-



thesizer keyboards, external samplers, mixers or tape decks, it might be better to stick to the hardware that actually goes inside the computer — one or more models of MIDI interface, synth card and wettable motherboard, plus a couple of sets of speakers.

The View From the Trenches

To get the view from distributors and the retail channel, CCW talked to one of the major Canadian audio-card distributors, and to a retailer who specializes in digital music. According to both, "The major trends are that the digital recording and MIDI market have become accessible to the general computer user, either in terms of price point. It's not exclusive anymore. You can add good music capability to a PC for under 300 dollars. Much of what you need is now standard hardware on many PC and Mac computers."

In the computer music specialist's shop,

"probably 40% of our customer base are professionals, and 60% are amateurs. There are definitely many more entry level consumers now that prices have dropped. They've bought a realizer, and know it has musical capabilities. They have a sound card, and may or may not have a MIDI interface, but they come in and ask what kind of music they can make, and we show them what they can do."

The availability of multimedia music conversion software for PCs has had a stimulative effect on the demand for audio cards. "There are lots of CD-ROMs for musical instruction. This helps drive more customers to upgrade their sound and music equipment on the PC."

More Musical Windows

The music hardware product line has changed drastically. Until a few years ago, high quality audio was a big-ticket Mac specialty. Then, "it really, really changed in about a year ago (coincidental with the release of Windows 95 Plug and Play and the advent of cheap Pentium PCs). The big Mac third party audio developers have seized the Windows opportunity and developed mixer into Windows versions. Now, you have to stock a full line for Windows as well as the Mac. The most popular sound card models for us are the Roland RAP-10 and the Gravis Ultrasound. We sell tonnes of MIDI interfaces. The most popular is the MasterQuest MIDI interface, for under \$90."

The experienced retailer emphasized that most of his customers were repeat business. "There's competition from clone PC retail shops, and direct competition with music stores. To get and keep customers in the audio field, you need to be knowledgeable, and to provide service, not just a computer-driven hard sell."

A large Toronto retailer, who does not wish to be named, says typical margins on sound hardware (audio cards, MIDI interfaces) is 20-35%, depending on product, and other variables such as sales, margins, and options.

Both distributor and retailer believe that recordable CD-ROM drives, though pricey now, are to keep dropping in price. The retailer commented, "CD-recordable (CDR) drives will come pre-installed in some computers within a year. They'll become standard if they get comparable in price to CD-ROM players. Computer musical instruments like key boards and samplers will tend to remain specialty items, since they require a fairly high level of retailer expertise and support." ■■■■

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Novell Canada gets new marketing blood

Dan Chapman, vice president and general manager of Novell Canada Limited, is pleased to announce the following new appointments and additions to the Canadian management team.



Michael Levy has been appointed to the position of director of marketing, overseeing all advertising, public relations and sales support activities. Previously GroupWise product manager, Levy has held a variety of sales and product management positions with the WordPerfect and Novell Canada organizations since 1992.

Paul Bates, formerly DEC sales manager, has been appointed product manager, GroupWise and Intranet products. Bates will develop and implement product marketing strategies to maximize Novell's GroupWise and Intranet product group in the Canadian market. Paul joins Jeff Vogel, NetWare and ManagerWare product managers in further defining and building Novell's product profile.

Dennis Woods has been appointed national education manager. Formerly with Intranet Training Group, one of Novell's largest National Authorized Education Centers, Woods will develop and implement a wide range of educational programs for Novell's growing community of networking professionals across Canada.

Thomas Rhodin, formerly director of marketing for Novell Canada, has assumed the position of director of international groupware marketing for Novell Inc. based in Great, Utah. Lynn Saran, formerly national education manager for Novell Canada, has assumed the position of director of North American marketing for the Novell Authorized Education Centers, based in Great, Utah.

Steven Murray Appointed General Manager, Computer and Personal Information Division for Sony of Canada Ltd.

Wim Salzer, President of Sony of Canada Ltd., is pleased to announce the appointment of Steven Murray as General Manager of its Computer and Personal Information Division.



Mr. Murray will oversee all sales, marketing and technical support activities for Sony's computer products in Canada.

Mr. Murray joins Sony of Canada Ltd. from Data General (Canada) Co., where he held several senior sales and marketing management positions.

Computer and Personal Information (CPI) is a division of Sony of Canada Ltd. CPI markets and supports in Canada, their range of medium size, desktop and storage products, including Transcend monitors, CD ROM and CD R drives and digital data storage products. CPI is located at

the Sony of Canada Ltd. headquarters in Willowdale, Ontario.

Fuji Photo Film, gets new Chairman and CEO and President

Mr. Masao Okada has been appointed Chairman and Chief Executive Officer of Fuji Photo Film Co., Ltd., in the company's Board of Directors meeting on June 27, 1996. Mr. Masayuki Masuyuki has been named President of the company, succeeding Mr. Okada.



Mr. Okada joined Fuji Photo Film Co., Ltd. in 1948 and has served in the company's President since 1983. He has also provided leadership in numerous industry associations in Japan and in the regions of various growth in government and industry associations around the world.



Mr. Masuyuki joined Fuji Photo Film Co., Ltd. in 1999 upon graduation from the Economics Department of Kyoto University. He has held important positions in Fujifilm's Industrial Office Automation and Magazine Products Divs. Mr. Masuyuki was appointed a Director of Fuji Photo Film Co., Ltd. in 1999. Managing Director in 1993 and Senior Managing Director in 1992.

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Printers are Like Razors

Printer consumables are like blades to a razor, they provide a steady revenue stream that is more profitable and could, in the life of the hardware, bring in many times the cost of the initial printer sale.

by Edward Dapuntis

Here is a riddle: How is selling computer printers like selling razors? The answer is simple. The profit doesn't come from the razor, it comes from the razor blades; the profit in the printer business comes from the printer cartridges and the supplies.

Printer manufacturers don't view their products in the same way as PC manufacturers view personal computers. As printer prices have dropped over the years, more are sold, and the market for consumables—cartridges and special printer paper—is booming. The latest research from the Evans Research Corporation predicts revenues from supplies and services will eclipse actual printer sales by 1997.

The manufacturers would like to see the middle market, the wholesalers, integrators, distributors, and value-added resellers cash in on this money generating opportunity.

There are an estimated 107 million printers in use world-wide, according to Lyra Research of New Bedford, Mass., almost as many printers as there are

PCs. With their many arms out there, the revenues of consumables needed to keep them up and running is astounding. Financial analysts say the

market leader Hewlett-Packard—which has over half the world's printer market—brings in \$3.4 billion a year from the ink-jet cartridge and laser toner cartridge business. These same analysts are predicting an annual business of \$18 billion world-wide within four years from new printer applications, like computerized photography, which have a real threat for ink.

The printer manufacturers are by no means losing money on their hardware, though profit margins on the most popular personal printers can be as low as 12 per cent. The profits on consumables can run as high as 70 per cent. The printer makers welcome the sale of the hardware as the beginning of a lucrative relationship with their customers. It is estimated that over the life of a home office PC printer the average owner spends double on consumables than what was spent on the printer itself. In an office, where printing transactions never sleep, the aftermarket can easily reach four or five times the initial price of the printer.

Although sales really started taking off only in 1985, ink-jet is the hottest segment of the printer market with Canadian revenues growing to almost \$300 million in 1996. They will account for more than 35 per cent of printer sales in Canada in 1996, according to the latest data from Evans Research Corporation. Laser cartridges will make up about 75 per cent of the consumables market but they bring in the lowest profit of about 20 to 25 per cent. As an older technology they have long been closed long ago by mail suppliers. On the other



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head, profit margins on ink-jet cartridges frequently rest at 60 per cent and can have hundreds of printers pricing a single ink-jet cartridge. Printer engineers are moving much of the printer head technology into the plastic ink package.

Paper is another potential high margin consumable in the printer market. The printer companies are moving into specialized media such as transparencies or specially coated papers for high quality print-out. Every month Canon sells a million sheet inverter, which allows a printed page to be stored into clothes, at \$18 for a pack of 10.

Howlett-Pickard is the undisputed leader in the Canadian printer market based on architecture with nearly 40 per cent. Its market share is increasing because of its strong performance in the ink-jet market. The number one vendor Canon, whose only significant products are ink-jet, is also gaining market share. The two leaders hold roughly three quarters of the ink-jet market between them.

The corporate printer market is being driven in two directions according to Catherine Morgan, corporate hard copy product manager at Howlett-Pickard Canada Limited. Document management is changing from print and distribute to distribute and print. Instead of print one and make multiple copies for circulation, the new paradigm takes advantage of networking so individual documents are sent out for printing by the recipient.

Because of the consistency that is required there is a lot of opportunity to add value. The management of printers is becoming as important to large corporate accounts as the management of PCs.

The adoption of colour is the other trend. There is a hesitation in the corporate culture to move into colour too quickly precisely because of architecture and design issues. There is an excellent opportunity according to Catherine Morgan for consultants to move with the evolution.

"The truth has to be recognized that the cost per page for older technologies is higher than if you went out and bought a newer technology. So the newer ink-jet technology, even with colour, ends up costing you less. Vendors have to stand up and say that."

Canon Canada's senior manager of marketing, Neil Kajimura, also attributes a large part of the success of ink-jet printers to an increase in colour ink-jet technology makes the price leap from monochrome to colour very small. "It's just like the advance on monitors," he says. "People would buy monochrome TVs only because

colour TVs were so expensive. Now everybody watches colour TV. There is no demand for black and white." The same situation is happening in the printer market.

Mr. Kajimura sees this trend happening up and down the printer market, in the home office, the small office and the corporate office.

Kerns Canada is trying to stimulate colour printer use and increase its ink-jet offerings. For Kerns, the concept of the sales market as a profit center is a familiar one. From its copier business,

Kerns has learned the value of its timer and paper supplies and air service business. "The channel has a value added opportunity for making money on supplies revenue," says Laurie Fleming, Kerns' manager of channel marketing. "Sell the box as cheap as you can and you're making money on the ink-jet cartridges, which are the true blades."

The inexpensive price of ink-jet printers brings about high volumes, says Jerry Davidson, general manager. Canadian operators at Okidata, number three in the laser market, and trying to grow in the ink-jet sector. He says printers are the vehicle to sell consumables and the profit comes from the repeat business in these consumables. "The key is for resellers to stock these consumables," he says. "Some end users find it difficult to find a particular cartridge and are lousy in a place where they run out because they don't know where to buy it."

Because there is less close product in ink-jet than in other categories there is less supply and higher demand. That means there would be the products that offer more profit when they are sold. They also draw consumers in to shop for other products. If the customer can see the consumables, where they bought the printer they know for sure that is one place they can go back to get the products.

Sandy Corbin, vice president printer marketing at Lexmark Canada, says the trend for network printing is toward higher resolution with more sophisticated paper handling and electronic form capability and higher processing speed. On the desktop the growth in ink-jet started in the home and migrated to the office. With high speeds, better quality and more reliable ink in lower cost they are approaching laser performance and colour is free. "What I haven't been able to get over is why the resellers are not more active in the supplies business," Mr. Corbin says. "They don't seem to be as aggressive as the suppliers do when it comes to stocking. A printer costs 40 cents." ☐



State of the Industry

by Leo Lealor

Panasonic wins with Canadian Olympic flowers

Panasonic hit gold when it signed up to sponsor Canada's Olympic Rowing team. The two-year deal cost \$250,000 but paid off handsomely when the team brought back six medals — one gold, four silver and one bronze — from Atlanta.

The idea of going with the rowers came from Panasonic corporate communications manager Ken Kilvert who says he was amazed that other companies did not even enter the race. After all, the team had won four golds and a bronze at the 1992 Barcelona Olympics.

Panasonic's video cameras TVs and VCRs helped team members study what they were doing frame by frame in a sport where the height of an elbow or tilt of a head can make all the difference between a medal and nothing. When rowers — gold medalist Marijn McBride was a prime example — agreed about what they were doing, head coach Brian Richardson only had to produce a tape to make his point.

Panasonic could not win the Olympics in their advertisements IBM had bought the exclusive in-tech rights to that but it is the future to sign the rowers up again for more international events over the next four years and the Sydney 2000 Olympics.

And, while Panasonic ads have mostly been for the company's audio-visual products, expect to see the rowers skating in their caps on behalf of Panasonic laptop computers, printers, CD-ROMs and hard drives.

Okidata aims colour at SOHO market

New Okidata figures should help boost efforts to sell color printers to small business. The company commissioned Inquire Research Corp. of Los Angeles to survey 200 companies with fewer than 200 employees; most had fewer than eight and found while 71 per cent thought color printing gave them a business advantage over competitors only 29 per cent actually used a color printer for their marketing materials.

The survey also revealed that 72 per cent used a PC and printer to produce such things as brochures, flyers and direct mail letters but few produced their own business cards.

Seven out of 10 said printed material was a "very effective" marketing tool.

NEC's and Packard Bell's Canadian operations integrated

It didn't take long for NEC and Packard Bell to consummate their marriage. The worldwide merger of NEC's PC operations include Japan and China with Packard Bell to create Packard Bell NEC was announced on June 4, 1996. In August, the companies' Canadian sales announced the first steps to extending the merger to this country.

Former NEC Technologies Canada sales and marketing vice president Greg Myers is now in charge of the combined PC systems products within the NEC division of Packard Bell NEC. He is responsible for NEC's Vista notebooks, PowerMate consumer and Ready consumer desktops and Profierra servers which continue to NEC brands in the amalgamated company.

Myers says "Packard Bell NEC's name to market capabilities world-class manufacturing competency and flexibility will serve to make NEC-branded products more readily available to retailers, retailers and end-users than ever before. Business partners and customers should continue to expect a high level of support and service for all NEC-branded products whether they are provided by Packard Bell NEC or NEC Technologies."

Patrick Kruse, former eastern region sales director for NEC Technologies Canada has joined Myers as national sales director. Clifford Rowlands, former western sales director, is now national sales director for NEC Technologies Canada.

Packard Bell NEC and NEC Technologies Canada will each have its own sales, marketing, engineering and customer support resources. Rowlands says "The new arrangement will allow NEC Technologies to become a more nimble and entrepreneurial marketing company focusing on existing industry-leading peripherals and innovative technologies for multimedia and the Internet."

Second shot at doubling RAM

Remember Synchrony Software, the software developer which ran into heavy weather over its bestselling Windows95 SoftRAM. Synchrony had the program doubled memory. Customer tests showed it didn't.

The Calgary City Cash, company then offered dissatisfied buyers — 700,000 of them worldwide — a full refund or an upgraded version of the product. In Canada, distributor Ingram Micro described SoftRAM as one of its top sellers.

Synchrony, without admitting liability, subsequently consented to a U.S. Federal Trade Commission order, agreeing to substantiate any future product-related marketing statements regarding SoftRAM and other products.

In May, the developer said it was on target to meeting its July schedule for introducing SoftRAM 96, an revamped version of the much-criticized product. It now says it will be available well before year's end.

Last month (Aug. 1 at MacWorld Boston), Synchrony gave away 5,000 demo disks for its RAM Charger Mac memory optimization utility which is now running at a suggested \$55/95. The demo version can be downloaded free from the company's website at www.synchrony.com.

As a result of the response we received at MacWorld and the rapidly growing number of Mac users downloading the full RAM Charger program... we are planning for a rapid ramp-up of sales," said Synchrony executive marketing v-p Daniel Taylor.

Microsoft Canada and EMU ink deal

EMU Data Systems has landed a big one. Microsoft Canada has signed the Calgary, Ont.-based company as national distributor for all its products.

Says general manager Jeff Dorrer "Microsoft Canada is very pleased to add a distributor of EMU's culture to its customer service network. EMU president Jim Emill responded "EMU's strength in the area of Internet technologies matched with Microsoft's Internet strategy lays the foundation for an effective and long-lasting partnership."

EMU describes itself as a highly-focused distributor with a specialized range of products with a core competency in client-server technology.

Microsoft commented that the addition of superior technical support, particularly for Windows NT, and its growing array of Internet and Web products, "should guarantee considerable mutual momentum" — that, in plain English, means sales — for the VARs who form the majority of EMU's customers.

EMU will focus on NT products, BackOffice server software, and Internet products and developer tools including FrontPage Visual C++ and the Microsoft Internet Information Server.

EMU, a public company has offices across Canada, in the US and Hong Kong (888)



Pitfalls to avoid when building WANs

By Steve Eisinger

Some WANs (value added systems) who have experience setting up LANs (local area networks) feel they can make some easy bucks by converting the LAN into a WAN (wide area network) by throwing in a few routers and hooking up a few remote offices. How tough can it be, a glit'z bling and some small WANs are dividing that there is good money in WANs, particularly since the going rate for WAN specialist is often \$125 per hour and up, compared to \$40 to \$70 per hour for LAN services. Unfortunately, they sometimes don't realize that unless you are careful it is easy to lose money and ruin clients doing what appears to be a simple WAN project. If you are thinking of entering the WAN business, you would be wise to keep the following points in mind.

Don't buy the cheapest hardware. A typical WAN requires remarkably little hardware and can often be created for as little as \$1500 per site. Unlike a LAN project where initial hardware costs often are quite large, the operating costs for a WAN can quickly surpass the initial hardware investment. Compared to Ethernet, telephone lines and data services like X.25 and frame relay are very expensive, so it can be worth spending a little more on equipment if they will manage these long term expenses.

A single frame relay router, for example, may not have the congestion and flow control sophistication to make the best use of the bandwidth. Also a cheap router may not allow you to prioritize traffic so that video conferencing traffic, for example, has precedence over simple email or provide for QoS (quality of service) to maintain line charges. Your client will often not be aware that these features are even available, and saving a few hundred dollars by choosing a cheap frame relay router may be a costly mistake in the long run and the client will blame you when their phone bills go through the roof.

It is important that you have your client with a growth plan. By trying to save a few dollars on a router, you may not give your client the ability to connect to additional sites in the future or take advantage of new telecomm services or more efficient routing protocols. Generally speaking, a channel based solution where additional WAN modules can easily be added, is more expensive than a stand-alone router but it may be worth paying for the flexibility.

It is not uncommon to see datacom products being sold to end users at 10% to 15% margin.

The hardware is a single piece of deliver. Using a single PC or workstation even a single server may not make a big difference to a company's productivity, but if a gateway router goes down so does the company's ability to interact with the outside world. Although most datacom equipment comes with a warranty, your client must realize that it usually means that the unit must be returned to the factory for repair which can sometimes take weeks. In the meantime, the replacement is not paying for its Internet connection or leased lines and nobody is getting their e-mail.

For this reason, it is crucial that the client has extended support agreement where the WAN vendor upon equipment and commits to a rapid response to a network failure. You should be aware that datacom equipment can be difficult to obtain in a hurry, and while major computer wholesalers like Metrol and Tech Data are increasingly stocking datacom products such as routers, lead times of several weeks for a unit are not uncommon. You need to stock emergency spares for your key clients and keep their configurations up to date and you may also need to provide 24 hour support for some applications. Often the NRE can sell an extended manufacturer's warranty which provides for rush shipments and on-site tech support, but this obviously reduces the value added response of the deal and reduces customer loyalty.

Labor costs tend to be high. It is important to realize that a WAN project by definition involves multiple sites and this a single technician is not usually that effective in installing or troubleshooting a project because both ends of the link must be monitored at once. Labor costs and travel costs are consequently that much higher than LAN projects. It can take a long time to troubleshoot a WAN installation because there are so many environmental variables involved: the end user application, the interoperability of the devices (routers with routers or FRADs (frame relay access devices) or ISDN equipment), the quality of the telephone lines, the state of the router, the local cabling configuration, etc.

Make sure you set the customer's expectations accordingly by letting them know that it may take a while to work the bugs out, and avoid getting involved in the finger pointing which can occur between different manufacturers, the phone company and the application vendor.

Get to know the telephone company. If you are thinking of doing a WAN project for a client you should be aware that working with the local telephone company can sometimes be a painful experience. Particularly in the case of ISDN, where you frequently have new phone switches interacting with new routers, having an established relationship with people at the phone company can save you hours of frustration when troubleshooting an installation.

You should start cultivating strong relationships with key telco people as soon as possible and, if the client is paying you for project management skills, you will need to know how to enter phone lines and work with the phone company to come up with the most cost effective service plan for the client.

Be prepared for your competition. WAN hardware is available through widespread distribution and very few vendors have complex, true requirements to a it can be easy to obtain popular equipment. Unfortunately this also means that you may have less of competition for the business and it is not uncommon to see datacom products being sold to end users at 10% to 15% margin. While this may sound tempting compared to most other ITC margins, don't forget that a typical ISDN router, for example, may only cost \$1900, so your total margin is only a couple of hundred dollars. Unless you know what you are doing, this margin can disappear quickly in tech support time.

Despite the fact that WAN products are increasingly available through traditional PC channels and manufacturers are advertising in LAN oriented publications, wide area networking is still a specialized skill set. It can become a valuable revenue stream over time but don't expect the your first few projects will go smoothly and it may be worth subcontracting the WAN portion of a project to a more experienced VAR or consultant until you get the hang of it. **SEEK**

Steve Eisinger specializes in wide area networking and network issues. He can be reached at (604) 475-2574 or e-mail steve@telnet.ca



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South Korea • Samsung Is Carving Open TFT Panels

Samsung Group and American Corning have begun joint production of glass substrates for liquid crystal display (LCD) screens, reports the Korea Economic Daily. The joint venture, Samsung Corning Precision Glass, will turn out 100,000 units per month. This will satisfy around 40% of domestic demand for 170-inches (measured by 400mm substrates), and the report. The company is also planning production of larger 550mm by 650mm substrates by next February (Korea Economic Daily, August 16).

MFF Tops Corporate Taxable Income Ranking

Nippon Telegraph and Telephone was named number one in a ranking of Japanese companies' taxable income; the first time it was top in eight years, according to credit research and rating agency Nikkei Database. The telecommunications provider had a total of 354.8 billion yen (\$3.35 billion) in taxable income in fiscal 1995 up 320.4% from the previous year. In second place was the Japanese central bank, the Bank of Japan. Following were Toyota Motor Corporation, Tokyo Electric Power Company, and Dai-ichi Kangyo Bank.

[Please, Return to Profile](#)

Pioneer Electric, Japan's leading maker of karaoke equipment, announced a return to profits in the first quarter of fiscal 1996. The company said it achieved profits of 804 million yen (\$7.42 million) in the three months to June on the back of strong sales in the audio sector in the same period last year. The company made a loss of 1.82 billion yen (\$16.81 million) for the full financial year; the company produced a loss of 1.68 billion yen (\$15.71 million) in its first quarter last year. To aid in its return to profitability, Pioneer said it would offer early retirement to 9,000 workers.

Go To Build More Printers

Agfa's Oleo Europe is to increase output of computer printers at its Thy Suburbany, Oleo (Thailand), reports Business Day. The company will turn out 30% more printers to bring total production to 1.56 million printers per year before the end of next year. The company's plant in Rajan Industrial Park, Angthay, will be expanded to allow for the increased production. Currently, 40% of all output is destined for Europe, the same amount to the US and the remainder to Asia, said the new-ope-

Further Officers #45 System for Office

Page One Ltd. has introduced a new system, designed to extend the Personal Handphone System to the office PBX (private branch exchange). It consists of a base unit that connects to the PBX and six hand-phones. Within the office, the units can be used as if connected to the office telephone system, for both incoming and outgoing calls. Outside of the office, the handset can be used on the NTT Personal PHS network.

New Conference System from MIT

Nippon Telegraph and Telephone (NTT) is to begin a new conferencing system for large groups of users. The new "Closed Line" service, from NTT and affiliate NIT Hokuriku Telecom, will begin on Monday and allow up to 200 users to participate in a conference call at the same time. Calls will be handled by means of special operators at centers in Tokyo and Kanazawa. Usage rates for the service will comprise of the regular telephone fee plus online charges of around ¥100 (US\$1) per minute.

Computer Supplies Inc. Ltd.
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- Support Hi8i Hi8c Hi8e Hi8f Hi8g Hi8h Hi8i Hi8j Hi8k Hi8l Hi8m Hi8n Hi8o Hi8p Hi8q Hi8r Hi8s Hi8t Hi8u Hi8v Hi8w Hi8x Hi8y Hi8z Hi8aa Hi8ab Hi8ac Hi8ad Hi8ae Hi8af Hi8ag Hi8ah Hi8ai Hi8aj Hi8ak Hi8al Hi8am Hi8an Hi8ao Hi8ap Hi8aq Hi8ar Hi8as Hi8at Hi8au Hi8av Hi8aw Hi8ax Hi8ay Hi8az Hi8ba Hi8bb Hi8bc Hi8bd Hi8be Hi8bf Hi8bg Hi8bh Hi8bi Hi8bj Hi8bk Hi8bl Hi8bm Hi8bn Hi8bo Hi8bp Hi8bq Hi8br Hi8bs Hi8bt Hi8bu Hi8bv Hi8bw Hi8bx Hi8by Hi8bz Hi8ca Hi8cb Hi8cc Hi8cd Hi8ce Hi8cf Hi8cg Hi8ch Hi8ci Hi8cj Hi8ck Hi8cl Hi8cm Hi8cn Hi8co Hi8cp Hi8cq Hi8cr Hi8cs Hi8ct Hi8cu Hi8cv Hi8cw Hi8cx Hi8cy Hi8cz Hi8da Hi8db Hi8dc Hi8dd Hi8de Hi8df Hi8dg Hi8dh Hi8di Hi8dj Hi8dk Hi8dl Hi8dm Hi8dn Hi8do Hi8dp Hi8dq Hi8dr Hi8ds Hi8dt Hi8du Hi8dv Hi8dw Hi8dx Hi8dy Hi8dz Hi8ea Hi8eb Hi8ec Hi8ed Hi8ee Hi8ef Hi8eg Hi8eh Hi8ei Hi8ej Hi8ek Hi8el Hi8em Hi8en Hi8eo Hi8ep Hi8eq Hi8er Hi8es Hi8et Hi8eu Hi8ev Hi8ew Hi8ex Hi8ey Hi8ez Hi8fa Hi8fb Hi8fc Hi8fd Hi8fe Hi8ff Hi8fg Hi8fh Hi8fi Hi8fj Hi8fk Hi8fl Hi8fm Hi8fn Hi8fo Hi8fp Hi8fq Hi8fr Hi8fs Hi8ft Hi8fu Hi8fv Hi8fw Hi8fx Hi8fy Hi8fz Hi8ga Hi8gb Hi8gc Hi8gd Hi8ge Hi8gf Hi8gg Hi8gh Hi8gi Hi8gj Hi8gk Hi8gl Hi8gm Hi8gn Hi8go Hi8gp Hi8gq Hi8gr Hi8gs Hi8gt Hi8gu Hi8gv Hi8gw Hi8gx Hi8gy Hi8gz Hi8ha Hi8hb Hi8hc Hi8hd Hi8he Hi8hf Hi8hg Hi8hh Hi8hi Hi8hj Hi8hk Hi8hl Hi8hm Hi8hn Hi8ho Hi8hp Hi8hq Hi8hr Hi8hs Hi8ht Hi8hu Hi8hv Hi8hw Hi8hx Hi8hy Hi8hz Hi8ia Hi8ib Hi8ic Hi8id Hi8ie Hi8if Hi8ig Hi8ih Hi8

NEWSBYTES



Vector Claims Videoconferencing First

Toronto-based Vector Videoconferencing Inc. claimed it has the first multipoint videoconferencing service that lets participants in a conference view four sites at the same time. Unlike most systems, which allow participants to see one other site at a time, Vector said, this system can display images from any four sites on the same screen, and lets participants select those four images from a total of 16 sites. The service uses a Multipoint Control Unit from Lucent Technologies Inc.

Advanced Gravis Directors Back Takeover Offer

The directors of Advanced Gravis Computer Technology Ltd. of Vancouver, have recommended to shareholders a takeover bid by Acorn World Corp. Acorn World, which makes office products and computer accessories, is offering 45 cents a share for Advanced Gravis, which makes sound cards and computer input devices such as joysticks. Gravis said its board has extended the company's credit facility for the period of the bid. Earlier, Gravis had reported it was negotiating a private placement with Vision International Holdings Ltd.

Memojet Completes Private Placement

Memojet Communications Inc., a Montreal-based maker of communications products, said it has completed a private placement of 1.1 million preferred shares to a group of foreign investors, raising \$4.675 million. Memojet said it plans to use the net proceeds of the private placement to main-

tain an operating loss. The preferred shares are convertible to common shares at the holder's option until August, 1998.

AST Launches Notebook And Multi-User System

AST Canada Inc., of Mississauga, Ontario, announced the Axiom 320 notebook computer (Newsbytes, August 12) and the ContrelAN multi-user system (Newsbytes, July 11). The Axiom 320, designed for the retail market, has a Canadian list price of \$2,599. The ContrelAN system, a Pentium-based machine that can support as many as 16 users on "thin client" workstations wired to the main system, is expected to have street prices starting around \$8,490 for four users, without monitors, AST Canada said. It is due to begin shipping late in August.

Apple Canada Launches Power Macs

Apple Canada Inc., in Markham, Ontario, has announced new models in its Power Macintosh line based on the newly introduced PowerPC 604e microprocessor. Among the new models is the multi-processor Power Macintosh 9500/160MP with an estimated street price of \$8,500 with 32 megabytes (MB) of memory, a two gigabyte (GB) hard drive, and an 8X CD-ROM drive. Standardly configured, the Power Mac 9500/200 is expected to sell for about \$7,490 and the 9500/180 for about \$6,850. With 64MB of memory, a 1.2GB drive, and an 8X CD-ROM, the new Power Mac 7600/132 has an estimated street price of about \$4,600.

Data General Announces Cybershield

Data General (Canada) Co., in Mississauga, Ontario, launched Cybershield, a secure Internet server based on its Avion technology. The Cybershield system will start at \$68,000, the company said, including an Avion server, DGUX operating system with R2 security options, Cybershield Secure Internet Software, Open Market Inc.'s Secure WebServer Version 2.0 and implementation services.

Toronto BBS Charged With Piracy

Software piracy charges have been laid against a Toronto bulletin board system

(BBS) after a raid on July 30. Operators of the Beyond Access board have been charged with distributing illegal copies of software from Symantec Corp. and its subsidiary Delrina (Canada) Corp. and from Microsoft Corp.

According to the charges, one of the operators of the BBS also sold, for \$70, a CD-ROM containing unauthorized copies of Microsoft, Delrina and Symantec software packages.

Michael Eisen, general counsel for the Canadian Alliance Against Software Theft (CAAST) in Toronto, told Newsbytes his organization had been hearing reports about the Beyond Access board for some time, but began a serious investigation in late March after a call to CAAST's anti-piracy hotline provided a contact phone number for the board.

CAAST and the Business Software Alliance (BSA), of Washington DC, both of which are organizations that focus on combating software piracy, have filed a lawsuit in the Federal Court of Canada, seeking damages, \$100,000 in punitive damages, an accounting of the defendants' profits, interest and legal costs, plus an injunction to stop further distribution of the software. Eisen said the plaintiffs have already obtained a temporary injunction against further distribution of the software.

Eisen said this is the first time CAAST has been involved in civil charges against a bulletin board system for software piracy, but he added that "there are other boards being watched and I expect that there will be other proceedings."

Technical Problems Behind Sony DVD Delay?

Sony Corporation's decision to delay launch of its digital video disk (DVD) players until spring next year may not solely be due to market considerations. Industry sources, close to the DVD consortium, have suggested to Newsbytes that technical problems may be at the root of the decision.

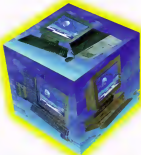
Matsushita Announces First DVD Products

Matsushita Electric Industrial Co. has announced as first, and the industry's first, digital video disk (DVD) players. The company will begin selling two DVD players and a TV with integrated DVD player later this year in Japan.

Our Biggest Ever

15 Entry Level Computers Tested

by Chris Fisher and CCFW Test Lab Editors



The contenders

We asked various vendors to send in entry-level systems for this review. We received a plethora of different configurations ranging from 100 to \$250 Mills. This makes sorting out the relative performance of the differing machines a little complex. However, it is fair to say that if a machine is fast in one particular processor category, it would likely be a fast machine if the processor were upgraded (or for that matter downgraded), relative to the particular class of processor that is used.

Logistics always dictate that we miss several candidates for review. Companies in the process of swapping models (many of certain systems being unavailable), and even PR personnel swapping jobs can get in the way of acquiring machines for testing. This month, some significant players with robust programs for resellers are missing. Advance Information, ASE, Compaq, and HP to name a few. Companies such as Dell Canada may also be worth considering. They do not have a formal reseller program, but under specific circumstances, will negotiate relationships on an individual basis.

The structure of this Lab Test is simple: in the accompanying chart you will find all the specifications for each machine, contact numbers, pricing and one or two other handy pieces of information. The benchmarks for each machine accompany the specs. The higher the numbers, the better performance the machine offers. Rather than leaving readers with our interpretation of the merits and demerits of the various systems, we polled the various distributors and asked them to give us a pitch as to why a reseller would want to carry their systems over the competition's. This information offers readers a look into how various personal suppliers do business and what they consider as their core competencies. Without further ado here they are:

How We Tested

To benchmark PCs and notebooks for Canada Computer Wholesaler, we use benchmark software from Business Applications Performance Corp. (BAPCo) (the latest version of this software, SYSMark/32 [released in mid-June], is an application-based benchmark for PCs running Windows95 and Windows NT. We will elaborate a little here using information from the company's Web site, www.bapco.com.

BAPCo measures the "real world" performance of computers running Windows95 and Windows NT applications. BAPCo, a non-profit corporation comprising leaders in the PC industry, develops objective performance benchmarks based on popular computer applications and industry-standard operating systems. SYSMark/32 is designed for three basic market segments and users who make purchasing decisions for computers running Windows95 and Windows NT business applications, hardware developers that need a tool to analyze and tune products under development, and software developers that want to optimize the performance of their Windows95 and Windows NT applications.

Benchmarking workloads within SYSMark/32 represent the most popular programs for word processing, spreadsheets, database, desktop graphics, desktop presentation, and desktop publishing. Workload scripts have been developed based on a survey of how the latest versions of application software are exercised in actual user environments. SYSMark/32 is a complete program that includes the following components: application software, scripts, and data necessary to run the workloads; automated running of workload scripts through the software's Workload Manager, a user interface that simplifies testing and ensures uniform and correct running of the benchmark scripts; and automatic generation and storage of test results and system configuration information. "This is the only benchmark of its kind developed by a worldwide, non-profit con-

sortium," says John Simons, BAPCo president. "BAPCo's development procedures ensure that SYSMark/32 users receive an objective software tool that measures performance based on how PCs run applications in the real world."

SYSMark/32 contains eight, 32-bit applications that can be executed under Windows95 and Windows NT (versions 3.51 and 4.0 beta 2). The applications are

WORD PROCESSING

Microsoft Word 7.0

Lotus WordPro 5.0

SPREADSHEETS

Microsoft Excel 7.0

DATABASE

Borland Paradox 3.0

DESKTOP GRAPHICS

CorelDraw 4.0

DESKTOP PRESENTATION

Lotus Freelance Graphics 5.0

Microsoft PowerPoint 7.0

DESKTOP PUBLISHING

Adobe PageMaker 6.0

SYSMark/32 is available to the public for \$99. The benchmark was developed and is fully supported by the current BAPCo membership, which includes: AIG Energy Resources, Amstel, Apicot Computers, AT&T Global Information Solutions, ClientServer Labs, GLE, Compag, Dell, Digital Equipment Corp., Duxson, EMAP Computing Labs, InfoWorld, Intel, Lotus, Microsoft, Motorola, NEC Technologies, Texas Instruments, Unisys and Ziff-Davis Labs.

An Affair With BAPCo

BAPCo is an impressive program to execute on a PC. Because it runs for a period of several hours, anyone looking to catch a customer's attention should consider having a copy of BAPCo running on a computer in the showroom. It would also be worthwhile running SYSMark on systems before they go to customers and to

test potential new hardware you are considering stocking. BAPCo is quite an exhaustive test; configuration conflicts and hardware problems will often cause the program to crash at some point in its execution. Even if a machine does make it all the way through the benchmark, BAPCo will sometimes help pinpoint problems that would otherwise go unnoticed. During this survey, we got results back from a machine that seemed suspiciously low in Pentium 100 MHz with a SYSMark of 66! Further investigation revealed to us that the COAST module on the machine was dead.

Over the last year we have used different iterations of BAPCo's software to benchmark around 200 PCs. It never fails that several PCs will not run the entire test. The question becomes, if a PC can't make it through a few iterations of running the most popular software of the day, how much time and money is being wasted trying to resolve problems that are out of both the customer's and support person's hands.

The latest version SYSMark/32 had problems running on approximately one quarter of the machines we looked at. In some cases, we had to run each of the application tests individually to obtain scores for the machines. Unfortunately, we can't draw any solid conclusions from this, as BAPCo admits that there are some problems with the benchmark's stability running on versions of Windows 95 other than 4.00.950. On several systems we had to go back and install one of these original Windows 95 releases to get the benchmark to run reliably. On a couple of machines, this couldn't be achieved in a timely fashion due to lack of hardware drivers. For this issue around, because of the complexity of the issue and the controversy that it will cause, we are not going to divulge this information. In future issues of COW, however, we will bring the issue to the floor, as it is in the reseller's best interest to know if a machine is stable. Our experience shows us that some system builders are better than others in this area.

<http://www.bapco.com>



3D Micro Systems Branding

(PC and Router)

Authorization Requirements

Resellers require some front with proof of demonstrate systems, a service area with at least one full-time technician, be willing to promote the product by advertising and participating in the co-op program - newspaper, radio, TV programs, a healthy credit situation.

Marketing Support:

Co-op advertising funds for authorized reseller 45% reimbursements on advertisements pre-approved close working relationship with sales rep to develop region and zone.

Maintenance Relationship:

Service technicians dedicated for any service inquiries by resellers. Depot warranty available for both resellers and end users across Canada.

Volume Discounts:

There are special volume incentives for authorized resellers.

Demo Units:

Available for authorized resellers.

Support:

Documentation for entire system.

Vendor Comments:

N/A

Editor's Notes:

The IPC and Broadwell machines come with some extra features that are not found on other PCs. They are the only vendor in the survey to provide systems with 33.6 Kbps fax-modems and the IPC system we looked at came equipped with an FM radio tuner. These could prove extremely attractive to end users.

Compucon**Authorization Requirements:**

Reseller candidates cannot be geographically located near existing authorized resellers; distance between resellers is subject to the discretion of Compucon.

Marketing Support:

End user leads referred back to nearest resellers; funds available to support marketing of Compucon by dealer (e.g., sharing part of advertising and cost of salesperson).

Maintenance Relationship:

Reseller acts as the front end for customer support. Free warranty by manufacturer as depot. Free technical support from Compucon to Reseller.

Volume Discounts:

Available.

Demo Units:

Available in discount pricing - one demo unit per authorized reseller for shop display.

Support:

Full set of hardware manuals, warranty certificates, all documentation for future hardware purposes to end user.

Vendor Comments:

"Systems are designed to meet industrial sector demands as if they will be running in a 24 hour, non stop shop. All components and internal power layout is carefully selected

and engineered. Systems are designed for multimedia and communications in today's EMV (voice) room."

Editor's Notes:

The Compucon system came with one of the best sets of accompanying documentation of all systems we have seen. A relatively simple thing to accomplish, putting all documentation into a logical order in a labeled thumb-stuffed three-ring binder. The benchmarks for the Compucon machine were highly acceptable.

**Comtronic****Systems Breaked:**

A Open-PI 33

Comate-P120

Authorization Requirements:

Must be a reseller VAR, SL, regional, etc.

Marketing Support:

Nation wide marketing and advertising campaigns for products in both industry and end user publications. PCP and marketing materials, product literature for approved dealers. Custom co-op marketing programs for individual resellers, product sales incentive programs, and product training.

Maintenance Relationship:

Comtronic and manufacturer warranty for all products sold. Two years parts and labour warranty on all systems. On-site service available. Nation-wide complete service and RMA departments for all resellers and their customers.

Volume Discounts:

Dealer pricing determined on an individual case basis, dependent on quantity, nature of order and purchasing arrangements.

Demo Units:

Custom evaluation units available for testing upon request of approved dealers.

Support:

National 1-800 hotline, Web site with online catalog and product information. Technical service and support, e-mail correspondence, and fax back.

Vendor Comments:

"Comtronic is a national distributor of brand name and OEM computer systems, multimedia packages, peripherals, hardware, software and components. Established in 1987 Comtronic has become one of Canada's top-ten computer distributors. Employing over 350 people throughout Canada, Comtronic has sustained growth every year.

Comtronic has offices located across Canada, allowing Comtronic to offer nationwide support and service for all of our clients. Our existing client base in the distribution sector includes over 1,500 resellers, system integrators, and retail outlets. Besides distribution, we have expanded our focus into manufacturing systems and offering a full variety of services, support and consulting solutions.

Our goal is to become a competitive manufacturer of high quality value-driven PC systems while striving to develop long-term relationships with progressive companies. We commit to the quality of our products that are backed by a full Comtronic warranty."

Editor's Notes:

Comtronic sent in two systems, one under the Comate brand name using a Cyrix 5x86 processor and one under the A-Open brand name using an Intel Pentium processor. Both machines performed well in their respective classes.

Empac**Systems Breaked:**

A4000

Authorization Requirements:

Must be a computer reseller.

Marketing Support:

Retail box and form.

Maintenance Relationship:

Resellers can offer own support and on-site upgrade system e.g. for modern networking.

Volume Discounts:

Yes, for government, school boards, Universities, and Canada top-500 companies.



“



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COM



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”

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DAVIDELLE
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HERISEL
1-800-477-4750

Buch Data
1-800-448-5588

LAUREL
1-800-443-4722

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Entry Level Computer Test Results

	 Compucon P-100	 Comtex P-100	 Magitronic P-100	 Samtick P-100	 Ambra 9131C	 Comax P-120+	 STD P-120
Processor	Pentium 100 MHz	Pentium 100 MHz	Pentium 100 MHz	Pentium 100 MHz	68020 120+	Cyrix 680 P-100+	Pentium 100 MHz
External Cache	512K	256K pipeline	256K pipeline	256K pipeline	256K pipeline	256K pipeline	256K pipeline
RAM	16 MB EDO	16 MB EDO	16 MB	16 MB EDO	16 MB	16 MB EDO	16 MB EDO
Video Card	ATI Mach 64	Si 100-64	Si 100-64	Trident 9080	S/S	Si 100-64	ATI Mach 64
Video Memory	2 MB DRAM	1 MB DRAM	2 MB DRAM	1 MB DRAM	2 MB DRAM (UMA)	1 MB DRAM	2 MB DRAM
Sound Card	SB-16	ES6889	Cx4 15-bit	True 2005 16-bit	ESD 1658	Acx 5301	SB-16
Hard Drive	Quantum Festival	Western Digital	Seagate	Quantum Festival	Seagate	Western Digital	Quantum Festival
	1.2 GB EIDE	1.2 GB EIDE	1.2 GB EIDE	1.2 GB EIDE	1.2 GB EIDE	1.2 GB EIDE	1.2 GB EIDE
CD-ROM Drive	Creative Labs 4x	Parasonic 4x	Sanyo 6x	N/C 6x	Toshiba 6x	Acx 8x	Parasonic 8x
System BIOS	Award	AMI	Award	Award	Award	AMI	AMI
Plug & Play Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating System	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95
Extras	Speakers	Speakers	Speakers	Speakers 28.5 in. monodisc	Speakers 28.5 in. video/monodisc	Speakers	Speakers 38.5 in. video/monodisc Joystick
Software included	Good	Good	Very Good	Good	Very good	Lacking	Good
Price/performance	Good	Good	Good	Good	Good	Excellent	Good
Extra features	-	-	-	Good	Good	-	Good
Windows Benchmarks							
Desktop Publishing	82	83	89	94	78	97	100
Desktop Graphics	107	94	96	83	77	118	114
Desktop Presentation	95	86	90	86	76	106	101
Word Processing	95	87	88	86	71	87	100
Spreadsheet	100	91	95	85	82	116	100
Databases	95	91	N/A	87	74	97	99
Spewerk 32	95	89	N/A	84	76	106	100
Contact	(800) 279-1980	(800) 272-8285	(800) 865-6447	(800) 840-1182	(800) 405-7989	(800) 479-8206	(516) 880-2222
Internet contact	www.compucon.com	www.comtexusa.com	www.magitronic.com	www.priegroup.com		www.commax.com	www.std.net
Suggested Retail Price	\$1,999	\$1,417	\$2,199 ***	\$1,599	\$2,599 *	\$1,380	\$2,099
Street Price	\$1,999		\$1,999			\$1,290	\$1,845
Resale Price			\$1,590			\$1,200	\$1,600
Warranty	3 years	3 years	2 years	3 years	3 years	2 years	2 years

* Includes 14 inch monitor

** Includes 15 inch monitor

*** System tested w/256K pipeline burst



A-Open P-123	Bondwell BW98-S133	Empac Azura	IPC CDFX5133	Mycomp P-133	Seairix AS1 9800	Ulnet P-133	QA Comp P-150+
Pentium 133 MHz	Pentium 133 MHz	Pentium 133 MHz	Pentium 133 MHz	Pentium 133 MHz	Pentium 133 MHz	Pentium 133 MHz	Cyrix/AMD
256k	None ***	512k pipeline	None ***	256k pipeline	512k pipeline	512k pipeline	256k pipeline
16 MB EDO	16 MB	16 MB EDO	16 MB	16 MB EDO	16 MB EDO	16 MB EDO	16 MB EDO
53 Tio 84	Cirrus Logic	Diamond-Stein 84 01	Cirrus Logic	ETC 1628	Cirrus Logic	53 Tio 84	Tadpole 9680
8 MB EDO	1 MB DRAM	2 MB VRAM	1 MB DRAM	1 MB DRAM	2 MB DRAM	2 MB EDO	2 MB DRAM
84-16	Zoltra 16-bit	SD-16	Zoltra 16-bit	ESD555	N/A	9811 Matrix	Cyrix 16-bit
Western Digital	Fujitsu	Quantum Fireball	Fujitsu	Conner	Western Digital	Western Digital	Western Digital
1.2 GB EIDE	1 GB GB EIDE	1 GB GB EIDE	1 GB GB EIDE	1 GB GB EIDE	1 GB GB EIDE	1 GB GB EIDE	1.2 GB EIDE
Acir 8x	Toshiba 8x	Goldstar 8x	Toshiba 8x	NEC 4x	Mitsumi 8x	Acir 8x	Mitsumi 8x
AM	Award	Award	Award	Award	Award	Award	Award
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	Windows 95	None	Windows 95
Speakers	Speakers	Speakers	Speakers	Speakers	Speakers	Speakers	Speakers
32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram	32 kx 16mhz/ram
	Good	-	Good	Good	Good	Good	Lacking
	Good	Excellent	Good	Good	Good	Good	Good
	Excellent	-	Excellent	Good	Good	Good	Good
107	96	116	95	85	97	112	104
138	116	134	119	116	96	113	87
113	92	122	90	96	103	117	100
121	94	115	89	86	121	112	102
117	95	123	86	85	116	114	112
104	98	119	81	N/A	95	87	103
110	91	121	84	N/A	102	111	106
(800)479-8036	(800)611-7413	(800)662-6729	(800)567-7610	(1404)44-2690	(804)273-3692	(800)515-7732	(800)810-3886
www.aopen.com	www.bondwell.com	www.empac.ca	www.ipcnet.com			www.ulnet.ca	www.qa.com
\$1,625	\$1,560	\$1,869	\$1,629	\$1,685	\$2,214	\$1,452	\$1,495
\$1,532		\$1,699		\$1,325		\$1,295	
\$1,410		\$1,469				\$1,212	
2 years	2 years	2 years	3 years	3 years	3 years	2 years	1 year

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ML1300-600



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ML1300



EP100



EP100



EP100



ML1

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RICHMOND B.C. V6V 3Z1
TEL (604) 278-0706 FAX (604) 278-4306

EASTERN : CALSBY COMPUTER PRODUCTS
841-42, 752 Beaver Creek Rd.,
Richmond Hill, Ont. L3B 3Z2
Tel: (905) 731-0461 Fax: (905) 731-3862

**Demo Units:**

Yes, subject to approval.

Support:

Motherboard, VGA, memory included on site service support, Enpace web site 3 locations in Canada for Depot Service 1-800 (in Ontario).

Vendor Comments:

Best combination of Price and Performance
National Warranties (Mississauga Toronto, Montreal)

Competitive Dealer Program

Competitive Pricing

Weekly Special

Fast Delivery

Canada's leading PC distributor and manufacturer in business since 1989

Just PC program™

Editor's Notes:

The system from EMDAC was the hands down performance champion in the survey by a considerable margin. This is not surprising, as the system uses a snappy Diamond Stealth video card, which adds a little to the cost over and above many competing systems.

**IBM****Systems Brand(s):**

Amiba

Authorization Requirements:

As of September, 1995 resellers may call

IBM Direct at 1-800-465-PSIU ext. 1217 to order. Proof of reseller status is required prior to reseller pricing being released.

Credit Approval: For payments via credit card or certified cheque - no agreements. Upon approval credit:

net 30 day billing Ranges from \$1,999 to \$3,199 (CPU only) industry standard images w/ other manufacturer offer

Marketing Support:

All resellers are entered into IBM's referral database when authorized. IBM provides focus print ads on a frequent basis in major centers. They are tagged with a 1-800 number for customers to call for reseller referrals using the nearest postal code. The referral process is the same as with Aptiva. IBM provides industry standard marketing fund incentives in the form of rebates and cooperative advertising funds based on volumes sold. Marketing material, such as literature pads and training documentation are available. For large volume resellers, training sessions can be arranged.

IBM Direct provides pre-sale technical support to the reseller through 1-800-465-PSIU x1217.

Maintenance Relationship:

Resellers are not authorized to provide warranty service to customers. IBM will provide problem determination and replace the system (if required) directly to the customer. Enhanced PC Support is available for purchase by customer or reseller. This service includes upgraded technical support for software applications, operating systems and OEM equipment.

Volume Discounts:

Large volume discounts are offered on an individual basis and dependent on volumes.

Demo Units:

Demo programs are arranged and offered on an individual basis and dependent on volumes.

Support:

End user customers receive an enhanced level of service and support from IBM at no additional charge during the warranty period. The IBM PC Support line will provide set-up and configuration assistance to customers. During the pricing started period (first 90 days of the warranty period) IBM will provide assistance on the pre-installed operating system. IBM also provides problem determination during the warranty period. Amiba products have a three-year limited warranty (note year on mouse, keyboard and peripherals). During the warranty period IBM will provide 24-hour technical voice support via 800-555-1344.

Problem determination support is also available to a reseller calling on behalf of a customer.

IBM can contribute to lowering customer down time by resolving customer problems over the phone, arranging for service through IBM Express Maintenance providing overnight shipment of customer systems. (Certain geographic areas of Canada may take longer) to refer the customer to the appropriate OEM manufacturer for technical support on products IBM does not manufacture or pre-install.

IBM also offers Electronic Support for both customers and resellers through the IBM BBS.

(Bulletin Board Service) HelpFAX and other services for product and technical information.

(For example: BIOS upgrades, software fixes, drivers)

Vendor Comments:

Amiba is a Canadian product line and backed by IBM. The wide range of products offer leading-edge technology and responsive, competitive pricing. This results in good value to the customer. IBM provides resellers with no-charge lead generation, marketing material, technical support and a convenient 1-800 # in order product.

*Amiba products provide the perfect choice for conscientious buyers who want to enjoy all the benefits of top performance, power and technology. The Amiba Achiever Series boasts such leading edge features as Full Screen MPEG for sharp life-like video images, superstore stand up to its CD-ROMs and hard drives up to 2 GB. Customers can choose to suit their needs and budget from the Just PC100 right up to the Cyrix Gold P166+. Customers are ready to go right out of the box with Windows 95, Lotus Smart Suite. Peace of mind for you and your customer - rest easy knowing they have 24-hour assistance and three-year warranties backed by IBM. With Express Maintenance Service get a replacement system delivered promptly to your customer's door.**

Editor's Notes:

The Amiba machine was one of the more interesting that we looked at, using the UMA (Unified Memory Architecture), which allows the video and processor to access the same pool of memory. The overall performance of the machine was competitively good. However, the machine does come with a better-than-average selection of software and a 25.5 Kbps modem.



NIKANA PR 2000

IF YOU'VE BEEN ASKING WHY RESELLERS ARE CHANGING TO NIKANA PR SYSTEMS... WE CAN SUM IT UP IN ONE WORD...MORE!

More speed With Nikana, you upgrade easily to the latest Intel Pentium®Pro processor releases without dealing with major motherboard surgery.

More flexibility Nikana PR systems boast ATX options making Nikana one of the leaders in cutting edge technology.

More consistency Nikana PR systems are noted for the consistency of the integrated components used, making

service and support of the Intel Pentium®Pro processor series cost effective and predictable. No longer do you have to deal with the "flavor of the week" component products.

More savings No more dealing with price wars due to every distributor in your region. Nikana PR systems are distributed solely through White Knight Distributing and the trading area resourcing program provides for controlled distribution of the product line.

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Calgary Office:
4710-14th Street N.E.
Calgary AB T2E 6L7
Tel: (403) 291-5558
Fax: (403) 291-6889
Toll: 1-800-658-3301

Halifax Office:
Unit 1, 260 Wright Ave.
Dartmouth N.S. B2S 1Y6
Tel: (902) 458-9858
Fax: (902) 458-9988

The Intel Inside and Pentium®Pro are registered trademarks of Intel Corporation.

Luski International Systems Branded: Magnum



Authorization Requirements:

Resellers, VARs, system integrators can purchase and resell Magnum products.

Marketing Support:

Offer in-store banner and other materials, such as sales slicks, product guides and on-line at www.magnum.com.

Maintenance Relationships:

Magnum allows resellers to service the equipment and even prefer due as it promotes a stronger relationship between the end-user and reseller.

Volume Discounts:

Quantity price based on volume, less 2% for 10 or more units, 4% for 20 or more units. Discounts are educational and government bids.

Demo Units:

Presently, a Laptop demo program.

Support:

Response: 800 numbers for customers and resellers, reseller support via the Internet.

Vendor Comments:

"Magnum's slogan is 'The Power Of Value.' We use the best quality components that are off the shelf replaceable at the lowest possible price, thus ensuring good margins for a reseller with a low sales rate."

Editor's Note:

The Magnum computer is packaged in one of the more attractive cases. Performance was average for a machine of its class. Magnum adds value to its system with a good complement of bundled software.

Reseller can offer their own support, Tech

support for resellers.

Volume Discounts:

Yes.

Demo Units:

Available to volume customers.



Support:

We offer fax back service for documentation web www.mymag.com, and an 800 for resellers.

Vendor Comments:

"All our systems are Novell, Windows95 and Windows NT certified. We provide excellent products and after sales support. *MyMag* operates one of only two Novell certified labs in Canada, and is ISO 9002 certified. We put emphasis on the postperformance and we are a NMSD vendor for the Canadian Federal government."

Editor's Notes:

The machine's performance was probably held up somewhat by the Coffer hard drive and a slower video system. *MyMag* used a quad-speed CD-ROM and a 14.4 Kbps modem, lower than the standard specification, to keep the price down.



initially ready to use.

Maintenance Relationship with Reseller:

Dedicated Help with each reseller. Toll free sales and support.

Structure Of Volume Discounts:

No further discount till volume criteria reached, afterward there will be a 2% increase on further purchases.

Demo Units:

Available.

Support:

Available. Dedicated Internet Support, E-mail, Server for updated documentation (if it doesn't come with the system, or new drivers for newer OS).

Vendor Comments:

"Our intent is to provide quality computers for corporations and the general public. We provide up-to-date configurations and toll free sales and technical support. We use only quality components have a strict quality control and complaint handling systems to ensure total customer satisfaction. Certifications: ISO 9002, CSA, Novell and Microsoft."

Editor's Note:

The OA system reviewed used a Cyrix P-130 processor, its performance was slightly above the average score for a Pentium 133-based system. Not the fastest Cyrix P-130 system we have seen, but nevertheless a solid machine.



Sealink

Systems Branded:

AS1 9000

Authorization Requirements:

Monthly sales targets, geographical location, training program.

Marketing Support:

Product information brochures, corporate information, promotions, special events, give aways, trade shows, seminars, customer meetings, lead generation, product training.

Maintenance Relationships:

Sealink authorizes service centers across Canada. Sealink operates a 1-800 Technical Support Hotline from 5:30AM to 6:00PM.

Myrix

Systems Branded:

Mycomp

Authorization Requirements:

Need to be a computer reseller.

Marketing Support:

Co-advertising, trade show corporate and end user lead posing.

Maintenance Relationships:

OA COMP

Systems Branded:

Windows and Sistar

Authorization Requirements:

Yes. Weighing on dealers that can provide service and support. Maximum 2 - 3 dollars per city.

Marketing Support:

Nation wide advertisement and marketing.

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STABLE
RELATIONSHIP**

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Slim and bright with lots of energy. Into working fast and playing hard. Love traveling or just spending quiet evenings at home. I'm dependable, flexible and eager to grow and expand as you do. Hobbies include CDs and video. No photo necessary. Hope you like mine. Please respond with confidence.

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- 8X CD ROM
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Innovative TCP design represents the future direction of processor technology.

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- *Lower voltage cooling



800-786-2076

PST. Seaux offers access to our Internet web site and our electronic bulletin board service for technical bulletins and latest drivers, updates, etc. These services are extended at no additional cost. Authorized resellers have access to our team of service technicians who can work with their technical staff and resolve any difficult issues customers may encounter.

Volume Discounts:

Negotiable

Demo Units:

Yes, lead time as required

Support:

Seaux has an ability and willingness to form alliances. This is especially important in the under process. Seaux will work together with resellers to provide a needs assessment for current or potential clients. We are pleased to attend meetings with dealers as they present their company and its products to interested parties. We provide on-site training, product demonstrations and information sessions. Our information sessions may include participation from major component and software industry leaders. On-line support, technical bulletins and updates and 1-800 number.

Vendor Comments:

"In this age of increasing demand for product information and new technology, consumers are forcing critical issues and are placing more reliance on the advice and knowledge of resellers. As a PC designer, manufacturer and wholesaler, Seaux Technology Inc. supports its resellers with product knowledge and marketing programs. We view our resellers as our partners and we rely on them to recommend Seaux products to their customers and to praise the overall value of a Seaux PC as a cost-effective business or home solution. Our exclusive use of the reseller channel has been an important key to our success. We believe that Seaux offers resellers considerable advantages too."

Excellent price/performance value

Our substantial investment in research, development and manufacturing facilities allows Seaux to dictate the strictest quality control possible from raw materials to finished goods and incorporate the latest technology into all our components. Our PCs offer features, performance and service that compete head-to-head with products from other leading brands, yet sell at a lower price.

World class manufacturing facilities and international quality standards.

All Seaux PCs are designed and manufactured in our ISO 9002 certified factory in Richmond, B.C.

Our PCs meet superior industry standards

such as CSA/B, R/E, FCC, DOC, Novell MSDOS Windows, Windows 95 and Windows NT certifications.

By integrating R&D and manufacturing, we ensure total quality and responsibility with different components in one PC. For example, because we design and manufacture the motherboards for our PCs we can guarantee they are of high quality and take full advantage of the PC's power. Our sales and service teams work with the manufacturing and engineering side to ensure Seaux PCs meet the needs of the customers.

Quick response to changes in the market place

Our in-house team of engineers are in constant communication with worldwide industry leaders as well as Seaux staff to identify emerging technologies. The information is then shared with our resellers, corporate customers and different segments of the market to identify how these new technologies could be incorporated into our product line to meet the needs of the market place.

Canadian made PCs and board products

Seaux products are manufactured in Canada and offer the highest level of Canadian content in the PC industry. Reseller Seaux supports the Canadian economy.

Editors Notes:

The Seaux system unit is well packaged and complete with customized support documentation that gives an out-of-the-box experience to the end user that the kind provided by some of the giants in the industry such as IBM and Apple.



Samtack

Authorization Requirements:

None, but need to set up a basic account

Marketing Support:

Yes, Resellers can offer on-site support. All systems include 2 years parts and labour warranty.

Maintenance Relationship:

Yes

Volume Discounts:

Yes

Demo Units:

Yes

Support:

Reseller Hotline, Technical Support, 1-800-xxx support line

Vendor Comments:

"Brand name, easy to sell, good pricing. Samtack is a broad line, Canadian based distributor of high quality, name brand PC components, peripherals and software products, as well as personal computer systems."

Founded in 1989 Samtack has become one of the country's fastest growing distributors, growth serving over 2,000 PC dealers. VARS, system integrators and consultants come to coast. Headquartered in Markham, Ontario, Samtack also has offices in Ottawa and Montreal. Samtack is a member of the PMS Group international manufacturers of leading edge motherboards, video graphics cards, IDE/D0 controllers and "green" personal computers. At each Samtack is the exclusive Canadian distributor of PMS products. Abroad, PMS has representation in over 60 countries around the world."

Editors Notes:

Samtack was one of the faster Pentium 100 MHz-based machines in the survey, managing to surpass a number of others using higher speed processors.



STD

System Branding:

Computer

Authorization Requirements:

Most SE can create and dealer applications, provide sales forecast, purchase a demo unit on credit for two months. Must have strong in-house technical support and minimum monthly/quarterly purchase quotas.

Marketing Support:

Join advertising locally, link from STD's WWW page, listing on home page, national/regional advertising listings, special pro-

extended discount on products, first-hand information on new products, sales and technical training and seminars.

Maintenance Relationship:

Channel marketing maintenance, joint visit with reseller to corporate customers, monthly/quarterly visit.

Volume Discounts:

Volume discount per purchase order, monthly volume rebate, quarterly volume rebate, yearly volume rebate.

Demo Units:

Available for resellers at 5% off regular.

Support:

1-800 number for technical support, e-mail support, WWW technical support for downloaded drivers, BBS technical support, nationwide tech support with 11 offices across Canada.

Vendor Comments:

"Logixx provides owned Canadian computer manufacturers, 110 9003 facilities. Clearly Canada sales. All systems are CSA and DDC approved. Windows NT and Windows 95 certified. First Canadian PowerPC computer manufacturer. Only Canadian Computer manufacturer to offer federal government national master reselling offer."

Editor's Notes:

STD's system offered excellent speed, it is comprised of top-quality brand name parts, standing out from several other machines with its inclusion of a 28.8k modem and an iix CD-ROM.

Volume discounts are provided based on items ordered and quantity ordered.

Demo Units:

Available for select dealers or dealers who have shown past performance in sales.

Support Documentation:

Channel support is provided by faxback, Internet, toll free hotline support, and tech support via fax.

Vendor Comments:

"Resellers should carry our product since it is very competitively priced, and reliable, with good technical support. All Ultimec instructions are available in resolving dealer problems. Fast service and RMA has proved to be provided for defective units shipped to Ultimec."

Editor's Notes:

This machine was one of the better performers of those that we looked at for this review, although the machine could be much improved with a faster video card. This was one of the first machines in the lab that comes with support for a universal serial bus.

Competition is still among system vendors and it is very difficult to draw a definitive leader among the companies that sent us systems. There are two aspects to look at when trying to reach a decision of this magnitude. On the one hand, how good is the product, on the other hand, how are reseller relations structured. Customers demand both quality in products and service, a strong relationship between resellers, VMS and system integrators and the distributor/manufacturers is imperative in order to achieve the level of service required by the market. For resellers that care about customer service a good product alone may not be enough.

The Ambra computer from IBM is less than an average achieve in terms of price and performance, yet there is no ambiguity in the IBM reseller policy and their ability to relate to and support resellers. Seano has made great strides over the last year in bettering the presentation of their systems and also look to be a company with a well thought out channel strategy. A number of companies stand out in terms of consistency of product: Compucon, C&C Comp, Contronic, and Samsack have all

Feed Us Your Thoughts

It is our intention to produce monthly articles that are not only informative, but useful to VMSs, integrators, and resellers in the Canadian marketplace. We would like your input. Let us know the kind and depth of information that you require, and tell us if the specifications are detailed enough. What are we missing? What do you need to know? What format should the articles take? Like most people, we prefer constructive criticism.

been sending systems in for testing for some time now. Like earlier models the latest batch of systems stack up. Impec a new corner to the test lab sent in a system that beat the competition hands down in terms of performance.

Our picks are based primarily on the technical aspects of the computers, performance derived from benchmarks, features and pricing, obviously, to some extent we take business aspects into account, however, it is up to the reseller to feel out the service, margins and other critical components that make up the business relationship.

The Comux computer from Compucon using the Cyrix P120+ offers a tremendous mix of performance, features and pricing. The same can be said for the Perbium 100 that we received from Samsack.

good performance and the addition of a 38.4 kbps modem puts this system a notch above its competition. The Azura system from Impec puts our pick for its superb performance, although in the 133 MHz category there are several other machines that leave enough margin to add the quality components that would bring them up to the Azura's level. 3005.



Ultimec

Authorization Requirements:

Dealer is required to fill proof of business as a reseller with the appropriate reseller certificate.

Marketing Support:

Provided by giving out leads originating from the end user in the dealers respective local area. Spec sheets and product literature are provided.

Maintenance Relationship:

Resellers can provide their own support, by charging parts themselves, or call Ultimec direct.

Volume Discounts:



Collected Numbers

Reader Poll

Microsoft is wading into the Internet pool and making a lot of waves. They're giving out free copies of their new Internet Explorer 3.0 browser which is said to be equal or better than Netscape's Navigator. Just recently they signed a deal with STAR, one of Canada's largest Internet service providers, to make Explorer the standard browser. Netscape is loudly saying their product is better and people will pay for it. Netscape supports many OSes and is the market leader now. Microsoft will probably bundle Explorer with Windows 95 if everything goes well and the US Justice Dept. doesn't prohibit it.

This month's question is:

Do you think Microsoft will dominate the browser segment like they have with the OS segment on the desktop?

☐ Yes

☐ No

Results from our last poll.

66% of your responses said Intel's ATX specification will benefit resellers who build their own systems. 34% believed ATX will have no effect on resellers who build their own systems. None of you believed it would hurt resellers who build their own systems.

Do you think Windows NT 4.0 will increase sales for resellers?

75% said Yes

22% said No

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Estimated percentage of software market share in North America for first quarter 1996 by operating system and software product category.

Software Market Share by Category & OS

Q1 1996



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Understanding the Savvy Shopper

By Gaurav Bhowmik



I thoroughly believe that the Savyshopper phenomenon of the first half of the nineties has now created a backlash effect I call the savvy shopper. There are the consumers that won't even set foot in a place where commission-driven salespersons push and pull with hard-sell tactics, and endlessly harass them with questions like "would you like the extended warranty with that?"

It's not just the hard sell that turns them off. It's the fact that they feel they are not being listened to; they are looking for someone they can trust. And they look for signs of expertise. I'll explore this idea of Expert Evolution in my next column.

The good news, I think, is that these savvy shoppers are usually willing to pay a bit more for products to have the luxury of not being subjected to the superannuated super-sell.

The bad news is that the savvy shopper usually doesn't have the time to trawl all of the materials necessary to make a truly informed decision. They know technology changes so fast that even those in the industry have a tough time keeping up with it all. And, although many things have changed in the new marketplace, one thing will never change: a confused customer never buys.

What might confuse your customer?

- not understanding the technology
- not understanding your jargon or terminology
- ineffective or misdirected communication
- and so on

Exercise: think of other ways your customer might be confused.

The first few items on that list amount to a simple rule of thumb: explaining is always more powerful than describing.

The issue of ineffective communication is one that is always a challenge. Sometimes, there is a language barrier; sometimes it is a game of telephone tag. Fortunately, those of us with computers, faxes and other modern telephony options have a tremendous range of communication and organizational tools at our disposal. Find out how your customers prefer to be contacted and work to establish patterns of effective communications. It's the

easiest first step to achieving a self-fulfilling customer relationship.

The savvy shopper is probably at least as busy as you are and is either wise enough to realize — or too busy to take the time to learn — what it would take to learn all the required details. All that research adds up to a relatively poor customer. Whether they know it or not, what they need is a consultant who is an expert in the field their solution requires. The savvy shopper doesn't have the time to read all the magazines it would take to learn all the jargon and technical issues that differentiate today's products from one another. They need to cut to the chase, or at least focus on the big picture.

How, then, to spot a savvy shopper?

Obviously there is no single category of customer that you are likely to be dealing with, unless you are in an ultra-specialized niche, or have the luxury of hand-picking your clientele.

With that said, the savvy shopper looks for evidence of expertise. In order to feel safe about doing business.

There have been numerous articles in consumer-oriented magazines about how savvy shoppers drive the best bargains. The general theory goes like this:

The first visit, the salesman pitches their hot or hot standard deal.

The second visit, the customer typically shops for the salesperson's best deal.

The third visit, the customer is winning for the salesman's best price and the fourth time, the customer is considered a true winner.

New Consumers are not in love with the technology. Applications drive their decisions. Just as also manufacturers have discovered, the love affair with technology for its own sake is over. They are interested in solutions and productivity.

The New Consumer looks for the best mix of price/performance, name-brand/quality and service/support. Unlike finally, the corporate buyers have sought the latter most, while the close buyers and value systems customers have focused on the first two from their local vendors.

While there is much truth in the old saying, "you can have any two of the three," The savvy consumers are more likely to respond positively to the buzzwords that signify per-

formance and quality than the "traditional" PC buyer, who was both relatively uneducated and relatively price-driven.

While many computer advertisements over the last decade have tended to stress features, brand-name marketers have found it more effective to emphasize benefits over features. Does your advertising stress benefits or features?

Which works best for your business?

Just as in desktop publishing and web page design, where borrowing from other designs is practically standard fare, it is worth thinking about your closest competitors. You can be sure your customers do.

After all, building on the strengths of competitors works for Bill Gates, doesn't it?

Keep in mind that almost everybody is a member of more than one personality type. Although there will always be consumers who are naive, and easily "sold," I think that the new breed of shopper is savvy enough to recognize a salesperson's ploys to cut out information or push an inappropriate product.

Why is the consumer growing more sophisticated?

Mainstream media coverage, magazines (free and non-paid) and the influence of the Internet are all factors contributing to increased consumer awareness of technical issues, but many shoppers have been told certain key buzzwords that they have their shopping lists on. They may not be sure why, but they know they should look for a pipeline burst cable. T1-to-100 chipset, or whatever.

This information gathering strategy is what an associate of mine calls "baking cookies." The savvy shopper makes the help of the office computer what they bring cookies — get it? and leverages their expertise to help put the pieces together. Consider ways that you can help show more confidence in your customer's need. It's the next best thing to fresh baked cookies. **END**



ARE YOUR CUSTOMERS GETTING THE PROPER WRITE OFF?

By Bob Aron, FCA

As a business owner, you know that your customers are the lifeblood of your business. But, when it comes to the tax treatment of their purchases, you may not be getting the proper write-off. The IRS has recently issued a new ruling that will affect the way you write off your customers' purchases. This new ruling will require you to write off your customers' purchases as capital assets, rather than as depreciable assets. This means that you will be able to write off your customers' purchases over a longer period of time, which will result in a larger write-off for you.

One of the major frustrations for most businesses, is in dealing with computer and electronic office equipment and computer software. I do not mean this from the hands-on point of view but rather the economic

When you acquire equipment, you might write it off for depreciation within one year.

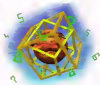
costs of rapid obsolescence and drop in value. This has been particularly frustrating for most business owners in the electronics has occurred much faster than the write off allowed for tax purposes.

Computer and Office Equipment

To provide some relief, there was an amendment to the capital cost allowance rules for computers, fax machines and copiers adopted after April 26, 1993.

Previously an asset of a particular type was put into an asset class. For example, computer on now Class 10. When the equipment was disposed of, if there were other assets in this class, a terminal loss could not be claimed. Unfavorably, most businesses had more than one computer and they acquired new ones as the old ones became obsolete. Unfortunately, a terminal loss was unavailable as there were more computer assets in this class.

The revised rules permit a taxpayer to elect to set up a separate class of Class 10 (computer equipment) or Class 8 (which includes other office items



ware and equipment) for each purchase which is at least \$1,000. This rule applies for computer equipment and systems software including data processing equipment that would normally be in Class 10. It also includes computer software, photocopiers or electronic communications equipment such as fax machines and telephones that would normally be in Class 8. If each piece of equipment which cost in excess of \$1,000 is in a separate asset class when that piece of equipment is disposed of, it can be written off and the loss will be recognized for tax purposes rather than continuing to be amortized in the general Class 8 or 10.

The purpose of this revision is to deal with the fact that this type of equipment often depreciates because of obsolescence faster than the rates permitted for tax purposes. If the equipment still has economic value to the business after five years, the owner will be forced to transfer it into the general class for that asset be it Class 8 or 10. If you wish to take advantage of this election to include any assets in a separate class you must make the election in the year of actual acquisition by letter filed with the tax return for that year.

There are two issues to be very conscious of here:

1. Electing to and then separating your computer equipment or electronic office equipment into separate classes in the year you acquire it. In so doing you should remind your Chartered Accountant of this provision to ensure he or she remembers to set up the separate classes on your tax return and prepare the election.

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2. Set up a system for tracking your equipment separately and identify when you are approaching the end of your five. If you do not want it transferred into the general Class 8 or 10, you will need to take the appropriate steps to dispose of it before the end of your five. Given the rapid obsolescence of this equipment, long term tax savings should be realized which will permit you to benefit from a tax break of the disposition of these types of assets.

Computer Software

Just as the equipment becomes obsolete rapidly the software seems to become obsolete more rapidly. As noted above, system software which is the operating system, be it DOS and/or Windows and/or OS/2, etc., is considered to be a Class 10 asset and subject to the rules outlined above. If it is part of a package costing more than \$1,000 and a proper election is made it can be part of a separate asset class.

Application software is generally put into Class 12 which allows a 100% write off but because it is subject to the half year rule, it is written off over two years. This method would be used for software where the expected

life of the software is greater than one year and as such it is capitalized.

When you acquire software you should look closely at it and if you expect the useful life, as seems to be the case with much software these days, to be less than one year then you might write it off as an expense within the year.

Disposal of "Obsolete" Computer Equipment

One of the things that frustrates me and many of my clients, is the sense of wastage when we dispose of computer equipment. In many cases, the machinery still runs well but does not have the speed of the newer equipment and/or will not operate many of the newer programs. I do not want to dump it into the landfill. Each time our firm has disposed of equipment we have been able to find somebody who did not have as high a level of equipment needs, perhaps because they were students doing basic word processing or similar individuals. We have also given equipment to charities that are able to make use of it. For example, recently we gave some old computers to an organization that is teaching senior basic computer usage.

If any of the readers of this column are aware of organizations that take old computers and use them for worthy purposes, please e-mail me details and I will try to put that in future columns. Those details should include the name of the organization, address, how the equipment will be used and what their system requirements are. Some that are only using them for word processing may be happy to accept old equipment that does not run Windows. If an organization needs Windows level equipment, it will not do them any good if I give them mine and people start giving them XTs.

If your gift is to a registered charity, the valuation will probably set a value representing fair market value, be it \$50, \$100 or \$200, as the case may be and give you a charitable contribution receipt if you ask for it. ☐

Rick Acton, F.C.A. is a partner in the Vancouver firm of Acton Gardiner, Chartered Accountants. He may be reached at 734-4871 or FAX 734-8123 or e-mail Rick.Acton@bc.sympatico.ca

CD-ROM Decline Predicted



In only four years, worldwide CD-ROM shipments have increased from 2.5 million drives in 1992 to an estimated 54.5 million drives in 1996. The CD-ROM is one of the great tech success stories, but the end is near, says a new Disk/Trend report.

Read-only CD-ROM drives are expected to provide 94.6% of all optical disk drive shipments in 1996, according to the report, with its replacement being the new DVD-ROM (digital video disk read-only memory) which is predicted to pass the CD-ROM in 1999.

Disk/Trend predicts shipments of CD format drives for computer applications to be dominated by CD-ROM drives through 1999. Although shipments of the new DVD-ROM drives, offering much higher capacities combined with backward compatibility for current CD-ROM disks, are expected to start at the end of 1996, DVD-ROM drive shipments are not expected to pass CD-ROM drive annual shipments until after 1999.

The report predicts that, in 1998, growth in total CD-ROM drive shipments will be minimal, with a sharp decline forecasted in 1999, as rapid increases in DVD-ROM drive shipments impact the CD-ROM drive market.

Robert H. Kuehn, vice president at Disk/Trend, told Newsbytes that the delay will be caused by the time required to establish large-scale DVD-ROM drive manufacturing, bring DVD-ROM prices down to levels competitive with CD-ROM drives, and publish a large selection of DVD-ROM titles. "It seems from here that the re-writable DVD-ROM is a few years from serious entry into the marketplace, but within the next five years it should take a dominant position," he said.

While they last, CD-ROM speeds will continue to go up. The report says that product life cycles for individual CD-ROM drive models are very short, as

drive manufacturers move to faster drives to enable content providers to improve multimedia performance. Quad-speed (4X) drives dominated 1995 shipments, with 74.5% of CD-ROM drive shipments. However, in 1996, 78% of all shipments are expected to be 6X and 8X drives, and by 1998, CD-ROM drive shipment leadership will be held by even faster 16X and 12X drives.

CD format rewritable drive shipments exceeded half a million drives in 1995, and the total is expected to top four million drives in 1999, but with significant changes in the product mix. Shipments of CD-R, write-once drives, used in making small quantities of CD disks, have grown rapidly in recent years and are expected to be 41.8% of the product group's 1996 total. Minusdrive PD drives, using either read-only or rewritable disks, have also seen rapid growth in Japan's domestic market and are forecasted at 57.2% of the 1996 total for the CD format rewritable drive group.

Initial shipments of re-writable DVD drives are expected by the end of 1997, and are projected to grow more than a third of the 1999 market for CD format rewritable disk drives.

The report also contains basic product specifications on 244 optical disk drives and 213 optical disk libraries. Profiles are provided on 103 existing and future manufacturers of optical disk drives, and libraries, including 24 with corporate headquarters in the United States, 69 in Asia, and 80 in Europe.

The new study on optical disk drives was released as part of the series of four 1996 Disk/Trend reports, detailing annual business reviews of the worldwide disk drive industry published by Disk/Trend Inc. Separate reports on removable data storage and disk drive arrays will be published in August and September, and a new report on magnetic disk drives was released in May. The 1996 Disk/Trend report on optical disk drives is priced at \$1,990. **ENR**

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Integrating Optical Disk Systems

Questions Resellers Are Asked Most Often

By Ray Hoshino

While optical disk storage has come a long way since its introduction almost ten years ago, it is still far from being a plug-and-play technology. Resellers continue to play an important role in the successful installation and utilization of optical disk systems, adding the key ingredients—software and implementation.

Resellers are also finding that their ability to act as educator is an important part of the selling process. To ensure customer satisfaction, questions concerning technological and application-oriented issues must first be addressed. With this in mind, the optical storage technology questions customers ask resellers most often and the answers to those questions are listed below.

What types of optical disk storage are there, and which type is most appropriate for my application?

Optical disk technology comes in four basic CD-ROM forms: CD-readonly (CD-

R), CD-rewritable (CD-RW), write-once (WORM), and rewritable. Each type provides particular advantages and disadvantages. The one you choose depends upon your application requirements.

CD-ROM disks are very similar to popular audio compact disks. Information is permanently stamped onto the disk and once recorded, cannot be altered, erased or updated. Mastering is done at optical off-site facilities and while the mastering process of each disk is expensive, copies can be stamped from the original very economically. For this reason, CD-ROM becomes feasible when 50 or more copies need to be made. Since the disks are relatively rugged and transportable, they are ideal for mass distribution of materials such as publications, catalogs, software and reference materials.

An outgrowth of the CD-ROM industry, CD-Recordable is rapidly becoming a reasonably priced storage method but it is better in a cost-effective and convenient means of distributing limited quantities of software, documentation and databases. It is also excellent for in-house publishing and preparing master discs for CD production. The high-capacity discs (660 and 700MB) provide the security of write-once technology but also can be read by any CD drive.

Write-Once-Read Many (WORM). Magneto-optical (MO) disks can be written to, edited and copied using a PC. Data is stored on the 630MB, 1.3GB or 2.6GB capacity disks in the form of permanent marks on the media surface by a low-powered laser. Since the marks are permanent, once data is recorded, it cannot be erased or altered.

The permanence of write-once

technology makes it ideal for archiving and security-sensitive applications. For this reason, write-once systems have been very popular with banks, legal firms, government agencies and others concerned with data integrity and long-term document storage.

Rewritable MO disks provide the same high capacities as WORM media (650MB, 1.3GB and 2.6GB) but, like a hard disk, they can be erased. Rewritable technology has proven to be particularly effective for CAD/CAM, publishing, multimedia, routine backup and other applications where work must be changed regularly.

Writing to conventional MO media writing takes 50 percent longer than reading the same data because the drive must erase previously stored data, verify the media and then write the new data. To overcome this performance problem a new 2.6GB direct-overwrite solution has been introduced. Using LDM DOW (light intensity modulation-direct overwrite) technology the drives wrap at a full 4MB/sec making them excellent for real-time applications such as on-the-fly backup/disaster recovery and real-time video.

What if I need archiving capabilities as well as the ability to store temporary data?

With today's multifunction optical disk systems, you no longer have to choose between write-once and rewritable systems. Now it is possible to purchase a single unit that accepts both WORM and erasable media.

When integrated into a package subsystem, multifunction drives offer some unique data management solutions. A multifunction package can store both long-term documents (reports, contracts, etc.) on write-once media, and short-term materials (FAXes, memos, etc.) on erasable media. Both types can be kept on-line and are accessible in seconds. The versatile subsystems are being used for daily backup routines, as well as archiving.





(transfer rate, disk size, etc.) which are dependent on the drive and how it will be used. For instance, when storing and retrieving small files, such as letters and memos, the importance of the data transfer rate (DTR) is minimal. If, however, the application calls for managing larger files, such as images, the DTR can play a significant role in overall performance.

Since performance is related to the application and your overall system configuration, asking products for a "best drive" is always a good idea. See how it

works on YOUR system, running YOUR application.

How long does an optical disk system take to install? Will I need to shut down my operation until it is finished?

The time required for installation depends on the size and complexity of the system. A simple document imaging and optical storage system can be set up in a matter of minutes. Requirements for in-line installing the SCSI host adapter into your PC, connecting the optical disk drive using a SCSI cable, covering the installation software disks, and booting the disk.

More complicated systems with customized application programs, multiple imaging workstations and/or optical disk jukeboxes require more time and expertise to install. If the networked imaging/storage system is connected to a PC workstation you will not have to shut the entire system down. If, however, the optical drive is jukebox will be running off the network file server, there will be some minimal downtime while the SCSI card is installed.

Once installed, the drive can be accessed immediately. Often times, however, large imaging projects require the scanning of existing paper documents. The initial scanning phase can be time consuming but an ongoing scanning program should minimize any inconvenience.

What form factor should I use: 12-inch, 5.25 or 3.5?

Here again your choice depends upon your application. The 12-inch form factor is utilized in applications with tremendous storage requirements. The government, for

instance, is using 12-inch write-once media to record tax forms and related documents.

The 3.5-inch drives, however, have gained in popularity for even very large imaging systems. The disks are smaller so they are easier to manage and transport. Since a single 2.6GB 5.25-inch MO disk can store as much as 1,500,000 text pages, they easily and economically fulfill the storage requirements for most applications.

The 3.5-inch drives have not gained widespread acceptance because while the initial cost of a 3.5-inch drive may be less, the actual storage cost is relatively high. A 3.5-inch disk costs about 20 cents/megabyte compared to about 4 cents a megabyte for a 5.25-inch disk (\$100 for a 2.6GB disk).

Other considerations when choosing a form factor:

- A single, 12-inch drive costs around \$10,000; a 5.25-inch drive costs about \$2,100; and a 3.5-inch drive will cost about \$1,300.
- Multi-function (readable and write-once) drives are only available in the 5.25-inch form factor. The 12-inch drives are only available in write-once or read-only. Most 3.5-inch drives incorporate read only capability as well as erasable, but not write-once.
- 12-inch media can hold up to 19GB of data. 5.25-inch wraps up to 2.6GB, and 3.5-inch disks provide around 650MB of storage.
- An optical disk jukebox allows fast access to multiple disks. For instance, it is possible to buy an optical disk jukebox that can store anywhere from 10 to 1,000 5.25-inch optical disks. Some jukeboxes can be configured with two or more drives, allowing greater access in a multi-user environment.

How do I justify the cost of an optical disk storage system?

Most optical disk systems pay for themselves in about a year. These savings come in a variety of forms including:

- a) **Storage space**—Since a single 5.25-inch disk can hold as much information as 60 4-drawer file cabinets (computer-generated text), the savings in storage space alone is tremendous.
- b) **Reduced overhead**—Popular applications for optical disk storage is microfiche replacement and departmental/intrajob on-line storage systems called data marts (200-300GB) and data warehouses (1TB+). Banks, government agencies, hospitals and general businesses are finding that optical disk imaging is not only more convenient than microfiche and standard paper file storage but also significantly less expensive.

What about standards in the optical disk drive industry?

There are ISO (International Standards Organization) standards, ANSI (American National Standards Institute) standards and, of course, what is most popular in the marketplace—de facto standards. In rare cases such as with today's MO drives, ANSI/ISO de facto standards are the same.

To complicate matters somewhat while two products may meet ISO/ANSI standards, they may not always be compatible. It is possible, for instance, to manufacture an optical disk that meets all of the requirements of the ISO/ANSI standards but does not work in an ISO/ANSI standard multifunction drive. This is because standards specifications are broad and some manufacturers may create the standards differently to provide them with a theoretical market advantage.

When people ask about standards, they are usually concerned with three things: compatibility, availability and performance. The best course of action is to look at de facto standards because they have become standard due to popularity. As a result, other manufacturers usually replicate the technology and/or provide second-source products for them. This addresses the compatibility and availability issues.

As for performance, nothing beats taking a close look at the system's specifications for yourself. Keep in mind, however, that performance is related to the application. While access time is usually considered the best indicator of performance, it includes other factors

□ **Reduced labor cost** — With optical disk storage, documents, forms, invoices, drafts, e-mail and other important information is kept on-line and ready to access. This eliminates searching through file cabinets, shuffling, hunting for needed documents and other labor-intensive tasks. Considering that it costs approximately \$45 each time someone stops to locate a paper document, this is a significant cost reduction.

Are there optical imaging solutions for the network?

Optical jukebox manufacturers and a wide range of software developers offer software that simplifies jukebox integration and disk management for network applications. With the software, the jukebox is completely transparent to the user. All operating system commands and applications programs work exactly as they do with a hard drive.

The software provides multi-user access to multiple optical disk jukeboxes. With support for multiple jukeboxes, it also provides organizations with a cost-effective solution to

expanding their systems as their storage requirements increase.

Today, there are integration solutions available for UNIX, Novell NetWare, Windows NT, LAN Manager, Banyan Vines 3Com and most other network environments.

If it's high-capacity storage that I need, why not use a hard drive or tape storage?

Optical disk technology offers a number of advantages over tape or hard drive-based systems. First, it is portable. A single pocket-sized disk will hold 2.6 gigabytes of data. Unlike magnetic-based storage, you do not need to worry about losing your data due to stray magnetic fields, media aging or other environmental hazards.

Optical disk media is also significantly more cost-effective per megabyte of storage. At approximately \$100 per 2.6 GB disk, an optical disk costs about 4 cents per megabyte while removable hard drives run about \$50 per megabyte. Tape costs only about 1 cent a megabyte, but it wears out and must be

replaced periodically. Optical media, on the other hand, can last a lifetime.

Which leads to another point. No other media is better suited for archiving data. Some rugged optical disks will retain data integrity for 30 to 100 years or more. Data cannot be accidentally erased and it does not need to be refreshed or rotated, like tape.

Optical disk technology is quickly becoming the technology of choice for many of today's high-capacity storage applications. Used for backup or imaging, optical offers a unique combination of price and performance advantages.

For the foreseeable future, however, its success will depend on the resellers' ability to provide technical expertise and to play the essential role of educator. Resellers who are willing to keep up with the latest developments will find that the profit potential is enormous. **DDC**

Ray Moskino is Senior Manager of Planning/Marketing at Nikon Storage Products.

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What is the number of employees at this location? (check one only)

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What is your firm's approximate gross annual sales? (check one only)

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CLEAN POWER NOW CUTS PROBLEMS LATER

by Jim Chow

Margins on computer systems are often single digits - and getting slimmer. Some resellers throw in a box of disks and a mouse pad for good will but to make money you have to sell something. Most resellers will sell a power bar with surge and spike protection but haven't considered selling uninteruptible power supplies (UPS).

The most important thing anyone produces on a computer is their data. Should the power suddenly go off or does something unusual in the middle of a session, the data could be lost or corrupted - a UPS will save your customer valuable time and money. Think of it as insurance not only against data loss but also equipment damage - sensitive electronics on hard drives, motherboards, communications equipment and monitors can get damaged by dirty power.

Good margins

The UPS market in Canada is about \$60 million and growing 15-20% per year says Tom Slegersman, Regional Sales Manager Western Canada for Best Power. Margins enjoyed on a UPS are typically 35-40% and there will be a repeat sale when the battery dies in 3-4 years. Rate of failure for costing a UPS is \$1 per 1 VA (volt amp) for an on-line UPS or \$0.60-0.75/VA for standby units says Slegersman.

Making the pitch

Begin by asking what type of work your client will be doing on their computer. Then ask how much it would cost to do that and what would happen if something unfortunate should happen to their data. You can also ask what would happen if they couldn't use their computer for an extended period of time here is where you can sell a big battery or even a generator to keep their computer system running. Next, tell them how often power is contaminated in their particular area and what the specific problems are. To do this, call up Best Power at 800-326-3795 and ask for a Free Power Quality Profile for their city. They may have a study on hand. If this fact

you can quote average occurrence of power problems in North America.

It's easy to sell a UPS after a problem, but you want to prevent any potential problem your client may run into. It is not unheard of for some businesses to suffer \$50,000 losses or more for every hour their computer system is down. Just think of the average hourly wage of one employee multiplied by the number of employees, add the cost of lost business, the cost to recover or rebuild lost data, the cost for service calls to bring system back on-line and the cost for any hardware damage caused by sudden shut downs.

Things are bad out there

While power quality in North America is relatively good, there are still on average, 289 power disturbances every year. Any one of these can potentially damage sensitive electronics or corrupt computer data. This is the documented conclusion of a five year study by the Best Power National Power Laboratory. The study monitored over 130 sites throughout North America. "Disturbance" was defined as any power aberration outside the recognized acceptability limits for computer equipment, as established by the Computer and Business Equipment Manufacturers' Association (CBEMA).

The study showed that the average computer is hit by the following over the course of a year:

- ◆ 16 power blackouts (power out for more than 8.35ms)
- ◆ 364 surges/overvoltages usually caused by drops in electrical demand and widespread equipment shutdowns
- ◆ 90 sags/undervoltages, caused by large loads starting up, line faults in utility power, or rolling brownouts created by utility companies on peak use days
- ◆ 69 transients or spikes, most caused by lightning, some by power coming back on after a blackout



Power problems and what they can do to your computers

Sags

Also called a brownout, sags are short-term dips in voltage levels.

This is a very common problem.

It is caused by electrical devices including motors, compressors, elevators, shop tools, refrigerators, etc. starting up. Electric utilities will not step in to help with extraordinary power demands. Using a technician called a rolling brownout, the utility will systematically lower voltage levels in certain areas for hours or days at a time. Not summer days, when air conditioning use is highest, will often interrupt rolling brownouts.

Effects: Sags deny a computer the power it needs, causing frozen keyboards, hard drives to spin at the wrong speed and peripheral time and unacceptable system crash. It wastes time and money using too fast or too slow a rate of data. Sags also reduce the efficiency and life span of electrical equipment, especially motors.

Surges

A short-term increase in voltage, usually 1/120 of a second.

Cause: by high-powered, electrical motors such as air conditioners, and household appliances nearby. When this equipment is switched off, the extra voltage goes through the power line.

Effects: Computers and sensitive electronic devices are designed to receive power within a certain voltage range. Anything outside of expected path, even RMS (root-mean-square) voltage levels with excess data, can corrupt and cause premature failure.



Spikes

Also called an impulse, a spike is a sudden sharp increase in voltage. A spike can cause electronic equipment and damage or destroy components.

Typically caused by a nearby lightning strike, spikes can also occur if utility power lines are downed in a storm or as the result of a car accident.

Effects: Catastrophic damage to hardware. Loss of data, short modem data transfer.

Electrical noise

Technically called Electro Magnetic Interference (EMI), Radio Frequency Interference (RFI), or harmonic, electrical noise disrupts the smooth flow from utility power.

Electrical noise is caused by many things, including lightning, load switching processes, radio transmitters, industrial equipment, neighbouring office equipment or machinery on the same power line. It may be intermittent or chronic.

Effects: Noise introduces glitches and errors into susceptible programs and data files.

Blackout

Total loss of utility power, may result in total loss of computer facility as happens in some buildings.

Cause: By excessive demand on the power grid, lightning strikes, so on power lines, accidents, earthquakes, etc. spots etc.

Effects: Loss of current work in RAM or cache, possible loss of hard drive F.R. Allocation Table (FAT) resulting in total loss of data stored on drive. Prolonged duration of outage.

Some considerations

Should you worry about power quality? You should if your work depends on computers or other sensitive electronic devices. The kind of power they require doesn't come out of a wall outlet. Computers should have power with a sine-wave shape. Rock-steady voltage.

It's true that higher-quality computers have internal power supplies that can "ride out" occasional power fluctuations. But only two sags in quick succession may be enough to exhaust even the best internal power supply.

The question is not do you need power protection, but what kind do you need? And how much?

Here's a good basic starting point. Do you need blackout protection to keep your device running when power fails? If so, how much backup runtime do you need? A few minutes? A few hours?

Next question: Do you need uninterrupted power protection? Remember that a power loss that lasts only a few milliseconds can bring down an entire network. If your system and application can't tolerate any loss of power, you need a true UPS. Otherwise, a standby power system may be sufficient.

Many forget to protect their "back door," even though power spikes occur on data lines and wreak havoc via unprotected computer communications ports, fax machines, and modems. All of these are good places for surge-suppressor protection.

Some electronics generate noise that can reflect back into the building's wiring, affecting other loads. Computers with switch mode power supplies are guilty of doing this and should be protected by a UPS that provides excellent noise protection.

Ten tell-tale signs of bad power

Here are ten tell-tale signs of power trouble put together by Best Power Technology.

Symptom One: Flickering Lights

Flickering lights usually are a sign that your facility has split-second outages or voltage sags. It may take an outage of hundreds of milliseconds for a fluorescent tube flicker, an outage of less than 20 milliseconds can crash a network. If your workstation is in the same office as the file server, you may notice a tendency for the server to lock up after the lights flicker. If your workstation is remote, however, you may never make the connection.

Solution: Protect critical components with a no-brink backup power system.

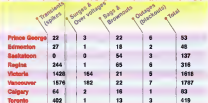
Symptom Two: Errors in Data Transmission Between Nodes

While this is one of the most common problems LANs face, few network technicians recognize that power problems may be the cause. Actually, two different kinds of power aberrations can interfere with in-wire communications: ground loops and electro-magnetic interference (EMI).

Ground loops can occur between any two devices linked by a data cable, especially if the devices are far apart. When a significant voltage difference develops between the two devices, the difference will "equalize" as an impulse traveling on the cable. The result can be a scrambling of the data carried on the cable, if the voltage potential is large enough, it can even damage I/O cards.

EMI currents of electrical impulses generated by "noisy" devices such as radio transmitters, fluorescent lights, and even computers or power supplies. These impulses travel through the air, and a data cable can pick them up in the same way that an antenna picks up broadcast signals. These conducted

Power Problems in Selected Canadian Cities



Source: Best Power

EMI impulses create noise on the data cable, interfering with communication between workstations, servers, and other peripherals.

Solution: Where possible, keep voltage differentials from developing by plugging all devices into a single grounding point, such as a UPS. Use data line surge suppressors to prevent impulses from reaching the computer. Run longer data cables through shielded, grounded metallic conduit to prevent EMI from reaching the cable. Keep cable runs away from noise generators, especially fluorescent lights.

Symptom Three: Unexplained System Lockup

Another common sign of power problems is the tendency of servers or workstations to freeze. While many factors can cause this sort of lockup, random system crashes are often a sign that low-voltage sags or sub-cycle power failures have stopped your logic circuits or the voltage they need to operate properly. NPL power quality data show that voltage sags are the most common type of power problem, striking a typical computer site 93 times a year.

Logic chips operate on very low voltages—typically just 5 volts DC. Manufacturers' tolerances for logic voltages are fairly tight; when voltage drops below 4.75 volts, RAM errors start to increase. If low-voltage sags or sub-cycle outages starve the computer's power supply, it may be unable to maintain logic voltage, and the system crashes. Ironically, certain Standby Power Systems (SPS) can also cause this kind of logic voltage drop. While these devices (often misleadingly called UPS) may advertise a fast transfer time in the event of a power outage, they are often unable to provide full power for one or two cycles after the transfer. In laboratory tests, computer logic voltage has been measured to drop as low as 3.5 volts when powered by some inexpensive SPS.

Solution: Use power conditioners to keep voltage to the computer within acceptable tolerances if the application is critical, insist on a UPS which has no transfer time when powering your computer from battery.

Symptom Four: Premature Component Failure

When an I/O card, motherboard, power supply or other vital component suddenly dies for no apparent reason, the failure is often blamed on a manufacturing defect. In reality, the quality control and burn-in programs of most reputable manufacturers make built-in defects a rarity. The real cause is more likely to be latent chip damage caused by a high-voltage spike.

Lightning and other spikes do not always cause immediate component failure.

Often, the delicate conductive traces in a microchip can simply be weakened by high voltage, only to fail weeks or months later, when the event that widened the chip's dense hair faded from memory. Unless such component failures are frequent, the network technician may never suspect the true cause of the damage.

You say you've protected your server with a surge protector and you're still getting component failures? It's possible that the surge device itself has become the victim of repeated lightning strikes, especially if it's one of the cheap hardware-store variety. Or spikes could be sneaking into your system via

other routes, such as data cables or modem connectors.

Solution: Be sure that all network devices are protected by high-quality, multi-stage surge suppressors, which carry a UL 1449 rating. See that data cables and modem lines are also protected by spike-free surge suppressors.

Symptom Five: Hard Drive Crashes

While this is rare, hard drives still crash, and power problems can be to blame.

Sudden power loss can be especially dangerous to hard drives; if power fails during a read/write operation, the heads can

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drop onto the disk, damaging the delicate magnetic medium and causing bad sectors. If this damage occurs in the wrong place, disk boot failures may result.

Solution: Use a UPS to provide enough backup power to allow you to do an orderly shutdown of the system.

Symptom Six: Data damage in CMOS and Other EPROM Chips

Many computer users have experienced the horror of turning on their computer and finding it suffering from amnesia: it no longer remembers how many drives it has, what kind of monitor it's supporting, or how much memory is on its motherboard. Again, bad power may be the culprit.

With the arrival of 385, 486 and Pentium systems, vital system configuration data is stored in ROM. High-voltage impulses can scramble the data on these chips, forcing the user to do a system setup from scratch. CMOS chips can also fall prey to electrostatic discharge (ESD)—that nasty, high-voltage shock you sometimes get when you touch a metal object on a dry day. ESD discharges can be several thousand volts in amplitude, enough to cause you pain and to wipe a ROM chip clean.

Solution: Protect equipment with high-quality spike-free surge suppressors. Use various devices on the market (grounding wrist straps, touch-pads, anti-static sprays, etc.) to reduce the risk of ESD near your computer.

Symptom Seven: System Devices Behave Erratically When Too Many are Turned On

If your network begins to behave strangely as more and more workstations are powered up, your problem could be harmonics, which show up on oscilloscopes as current or voltage distortions. Ironically, computers themselves are one of the biggest sources of harmonics, because their power supplies draw current in big, isolated gulps instead of nice smooth sine waves. If many of your network devices are powered from the same circuit, the harmonic content of that circuit can build as the devices are turned on. The result: the more workstations operating, the faker they behave.

Solution: Install a UPS or power conditioner, which feature a ferroresonant transformer. This special type of transformer is extremely effective at filtering harmonics from the input line. A ferroresonant-based device will also keep harmonics generated by the workstation from affecting other computers on the same circuit.

Symptom Eight: Frequently Aborted Modem Transfers

Power problems can cause modem

uploads/downloads to abort or cause a high rate of bad block messages. The situation can arise when high-frequency spikes or impulses traveling on the powerline couple into phone lines, which are almost never protected by any kind of shielding. These signals are then intercepted by the receiving modem as bad blocks.

Solution: Spike-free surge suppressors are now available that isolate phone-line lines. These devices can stop many of the impulses that travel on phone lines. You simply plug the modem line into one jack, and run another line from the second jack to the wall connection. Give one of these devices a try if aborted modem transfers are a recurrent problem. Be certain the device you select is designed with a single grounding point for both the electrical and modem or data line connections.

Symptom Nine: Wavering Monitor Screens

If your display flickers, wavers, or dances, it could be a sign of larger power problems that may be affecting your entire network. Voltage sags can make monitor displays shake. A wavering display could also be a sign of strong electromagnetic fields near the monitor. Either of these situations can do more than just disrupt your screen; they can cause RAM errors, scramble data, and contribute to component failure.

Solution: Use a UPS or power conditioner, which feature voltage regulation, to keep input power at a proper level. Keep EMI generators (especially electrical motors) well away from network peripherals.

Symptom Ten: Disk Drive Write Errors

Because your hard and floppy drives are really the only moving parts in your network, they are especially vulnerable to power aberrations. We've already looked at two reasons: damage caused by sudden power loss, and RAM errors attributable to low logic voltage.

One additional way bad power affects disk drives is to interfere with the rotation speed of the disks themselves. Proper drive access depends on the correct rotation rate; undervoltages can cause the drive to try to read or write data in the wrong sector, lost or garbled data, or actual drive failure, can result.

Solution: Protect equipment with voltage-regulating devices, such as a UPS or power conditioner.



Is poor power quality causing all of your network problems? Probably not. Any device as complex as a computer is vulnerable to failure from many sources, and networking many devices together only compounds this vulnerability.

But don't be too quick to discount the threat of bad power. A National Power Laboratory survey of 1,200 computer users showed that the number of service calls dropped an average of 82% after the installation of a UPS.

Considerations on a UPS

- fast swappable battery, standard lead battery*
- programmability, remote operation*
- software, OSes supported
- types of alarms—what do they alert you on?
- hardware design—is it a UPS, a stand-by or a transfer?
- duration of power supplied
- noise during operation, fan
- operational cost
- warranty on equipment protected
- microprocessor control
- technical support
- marketing support, margins, incentives
- Including a UPS in a system sale will not only save your client from a potential disaster but also add to your bottom line. When a power problem does strike, your client will thank you. **8882**

How to size a UPS

UPSes are rated in VA or VOLTS/AMPS. Ask your customer whether they need to power *most* equipment or *total* (e.g., 1.5x). Add up all the amps—CPU, DA, MONITOR, IS, etc.—Total 1 amp.

Magical formula

1x = 1200watts or 120va
Therefore
A 5 amp load (below) would require
3 x 120 = 360va requirement
Sell your customer 1kva and model up
if the specific size doesn't exist.

Voltek Topp Lite

source: Best Power Technology Topp Lite, QPS UPS APC

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Unit 100, 100 Main Street, Markham, Ont. L3R 9V2
Tel: 914-233-1000 Fax: 914-233-2329

Computer Associates Canada Ltd.
1011 Airport Rd. Mississauga, Ont. L4V 1W5
Tel: 905-478-4700 Fax: 905-478-4701

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1011 Airport Rd. Mississauga, Ont. L4V 1W5
Tel: 905-478-4700 Fax: 905-478-4701

Dr. 800-278-2554 Fax 800-278-0322
Tel Fax 1-800-287-0282

CLASIFIK (Jortek)
739 Union Road, MAHWAH, NJ, L3R 142
Dr. 800-1-1-1-41 Tel 201-425-8443

Data Tel Cabling Systems
715 Livingston Rd. East, JERSEYVILLE, OH 43081
Dr. 800-888-6777 Fax 614-294-9944

Dynetek Electronics Corp.
2220 Jackson Road, Unit 105, Richmond, BC, V6V 1V6
Dr. 800-210-2020 Fax 604-279-3020

Optical Corporation of Canada Ltd.
4115 Young St., Vancouver, BC, V6P 2C7
Dr. 614-750-7500 Fax 1-800-487-2548
Tel Fax 1-800-2-4-1-111

Discount Computer Club
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Dr. 800-831-1102 Fax 800-831-0813
Richmond, BC 604-279-1081

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2001 Rutherford Ave., Bedford, NS, B4A 1G9
Dr. 800-832-2690 Fax 800-832-2610
Branch office:

Stirling, Ont. Dr. 810-832-3008 Fax 810-832-3011
Stouffville, R.C. Dr. 800-832-2111 Fax 800-832-2141

6Bitch Canada Limited
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Dr. 800-419-8888 Fax 800-419-8882

Edco Wholesaler
105127, P.O. Box 148, Unit, Markham, Ont. L3R 2J5
Dr. 800-848-0000 Fax 800-344-0505

EMM Data Systems Ltd.
P.O. Box 7512, Toronto, Ont. M6H 3M9
Dr. 800-821-2444 Fax 800-821-2414

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Calgary, Alta. Dr. 800-278-2554 Fax 800-278-2554

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Edmonton, Alta. Dr. 800-278-2554 Fax 800-278-2554

Calgary, Alta. Dr. 800-278-2554 Fax 800-278-2554

Einberg Computer Products, Inc.
1400 Steeles Ave. East, Markham, Ont. L3R 9V1
Dr. 1-800-881-7514 Fax 1-800-881-0909

GARTEK/ARROW Gasline
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1001-10000 Ave. West, Calgary, Ont. T2C 1A6

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Advanced B.C. Tel: (604) 279-4711 Fax: (604) 279-4714
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Maxell Canada

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 Branch offices:
 Montreal, Que. Tel: (514) 485-8321 Fax: (514) 485-8320
 Vancouver B.C. Tel: (604) 476-7796 Fax: (604) 476-7717

McGimpsey Filtrix Distribution

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 Tel: (604) 270-9317 Fax: (604) 270-9318

Memory House Inc.

4333 107th Avenue East Richmond, B.C. V6V 2G3
 Tel: (604) 811-3130 Fax: (604) 843-1707
 Email: info@mhv.com

Martek Systems Corp.

8537 Ave. 5 Street, Woodstock B.C. N4Y 2B7
 Tel: (604) 221-8537

Marlin Canada

205 Atchison Drive, Mississauga, Ont. L4W 1T9
 Tel: (905) 240-7012 Fax: (905) 240-2651
 Branch offices:
 St. John's, QC Tel: (514) 394-8188 Fax: (514) 393-1818
 Montreal, B.C. Tel: (504) 279-2445 Fax: (504) 273-1112

Micrograph

2247 Glenhurst Ave. Burlington, Ont. L7M 2T4
 Tel: (905) 332-6641 Fax: (905) 333-8121

MI&AS Technology Inc.

2177 Aurora Road, Richmond, B.C. V6V 2J9
 Tel: (604) 278-2840 Fax: (604) 278-2842

Minilight Technology Inc.

1390 Burnside Road 2nd Floor Vancouver B.C. V5M 2Y7
 Tel: (604) 274-6487 Fax: (604) 274-3141

Montronics Office Automation

170-6220 Aurora Road Richmond, B.C.
 Tel: (604) 278-6763 Fax: (604) 278-6769

MPT Computer Supplies Co. Ltd.

40 Bristol Court 12 Midland Ave. St. Catharines, Ont. L2R 6A5
 Tel: (905) 344-0526 Fax: (905) 344-6345
 Tel: (416) 462-7562
 Web Site: www.mptcanada.com

Mitsubishi Electric Sales Canada Inc.

Information Technology Group
 4095 14th Ave. Markham, Ont. L3R 0M1
 Tel: (905) 478-7738

Motion Works Corp.

1320 Mainland St. Suite 100 Vancouver B.C. V6B 2T4
 Tel: (604) 683-7875 Fax: (604) 684-4105

Monetria Information Systems Group

402 Midland Ave. West Mississauga, Ont. L5M 3M1
 Tel: (905) 507-3200 Fax: (905) 504-7231

Multimedia Effects Inc.

40 Sybil's Court, Suite 105, North York, Ont. M2C 1J5
 Tel: (416) 444-2349 Fax: (416) 444-2450
 Toll-free: (800) 347-8594

Multimedia Solutions Inc.

2000 14th St. Suite 5100 Calgary, Alberta, T2M 0T8
 Tel: (403) 232-9911 Fax: (403) 232-7937

National Computer Products

19025 117th Avenue Edmonton AB T5M 2G2
 Tel: (403) 455-1400 Fax: (403) 455-1409
 Toll-free: (800) 881-8939

Branch offices:

Vancouver, B.C. Tel: (604) 475-8111 Fax: (604) 475-8888
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 St. John's, N.S. Tel: (902) 452-2000 Fax: (902) 452-5409

NETS Business Forms Ltd.

202 Devonian Dr. Midland, Ont. L4R 4V5
 Tel: (905) 526-4291 Fax: (905) 526-4292

NEC Technologies Canada

8333 Glenway Drive Mississauga, Ont. L5T 2J3
 Tel: (905) 796-5800 Fax: (905) 795-2540

Nextech

1402 Lonsdale Road Unit 7 Vancouver, Ont. M2T 3C7
 Tel: (416) 435-8640 Email: nextech@nextech.com

NMS Precision Inc.

2700 Highway 10 B. Unit 6 Mississauga, Ont. L4T 1M8
 Tel: (905) 830-5170 Fax: (905) 830-5179

Branch offices:

Vancouver Tel: (604) 393-0191 Fax: (604) 393-0200
 Montreal Tel: (514) 388-0503 Fax: (514) 388-0508

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 Tel: (905) 940-2675 Fax: (905) 940-2686

Oakridge

1755 Steeles East E. Mississauga, Ont. L4M 4M8
 Tel: (905) 238-4200 Fax: (905) 238-4401
 Toll-free: (800) 354-3262

Ongoing Novartis Ltd.

2111 Sheppard Ave. E. Scarborough, Ont. M1S 4C1
 Tel: (416) 461-3515 Fax: (416) 461-3540

Orca Corp. Canada Inc.

3241 1st Avenue North Burnaby, B.C. V5C 2P4
 Tel: (604) 439-8100 Fax: (604) 439-1207

Orchestra Multisystems Canada Inc.

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 Tel: (905) 940-1700 Fax: (905) 940-1634

Paisley Payment Tech. Corp. (Precision)

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 Tel: (604) 279-4881 Fax: (604) 279-4888

Pacific Farm Distribution Corp.

3000 170 12400 Centre Road Richmond B.C. V6V 2M6
 Tel: (604) 278-0700 Fax: (604) 278-0349

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2887 124th Centre Road Richmond B.C.
 Tel: (604) 278-3770 Fax: (604) 278-6709
 Toll-free: (800) 338-8712

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 Toll-free: 1-800-633-9081

Peltech Solutions

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PC Craft Inc.

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 Tel: (905) 474-1717 Fax: (905) 474-2894

PC DCS Group International Inc.

41 St. John's Road Suite 200 Toronto, Ont. M5R 2A2
 Tel: (416) 461-4800 Fax: (416) 441-6538

PC One Two Three Computer Inc.

1100 Hwy 6, Suite 100 St. Catharines, Ont. N2R 1X1
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 Branch office:
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Branch offices:

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 Calgary, AB Tel: (403) 270-6275 Fax: (403) 270-6320
 Markham, Ont. Tel: (905) 337-3777 Fax: (905) 337-5776

St. John's, QC Tel: (514) 944-7344 Fax: (514) 254-7980
 Ottawa, Ont. Tel: (514) 745-1608

Perle Systems Ltd.

40 Redburn Drive Markham, Ont. L3R 8T7
 Tel: (905) 476-8899 Fax: (905) 476-8899

Philips Electronics Ltd.

827 Silver Ave. Scarborough, Ont. M1R 1M5
 Tel: (416) 754-0210 Fax: (416) 759-3232

Pinnacle Micro, Inc.

19 Technology Way, Unit 301A, USA
 Tel: (414) 269-2600

Powers Electronics of Canada Inc.

830 Aurora Road Markham, Ont. L3R 0P2
 Tel: (905) 466-7607 Fax: (905) 466-7617
 Toll-free: 1-800-660-7809

Powersystems Computer Inc.

500 Aspen Road Unit 18 Markham, Ont. L3R 0V5
 Tel: (905) 476-1040 Fax: (905) 476-1040

Powersoft Systems Ltd.

811 148th Ave. East Suite 200, Rm. 200
 Tel: (416) 563-1481 Fax: (416) 563-1738

Progress Marketing Inc.

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 Tel: (604) 821-0386 Fax: (604) 821-0110
 Toll-free: 1-800-414-6444

Prodata

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 Toll-free: 1-800-387-3774 Fax: (905) 311-0280

Promer Enterprises Company Ltd.

2225 St. John Avenue Vancouver B.C. V5M 1H2
 Tel: (604) 271-5708 Fax: (604) 271-6588

Pro-Sonic Electronic Supplies Inc.

110 Centre St. Markham, Ont. L3R 2P5
 Tel: (905) 474-9848 Fax: (905) 474-8888

Protect Microsystems

277 Lakeside Plaza Court Quebec, QC H3K 1A2
 Tel: (514) 675-1531 Fax: (514) 675-2887

Provincial Products

2539 Highway 101 Mississauga, Ont. L4T 3M8
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Psyche Computer Corp.

2500-250 St. Unit 2 Lakeshore, Ont. L3R 1G2
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QOL Computer (Canada)

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QOL Systems Inc.

2700 Highway 101 Mississauga, Ont. L4T 3M8
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10878-Bayview Ave. Toronto, Ont. M2A 1J3
 Tel: (416) 272-2660 Fax: (416) 272-7001

RL Electronics Canada

80 St. John's Court Unit 4 Markham, Ontario L3R 8J3
 Tel: (905) 474-8800 Fax: (905) 474-8802

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4110 124th Avenue Richmond B.C. V6V 2A1
 Tel: (604) 270-7476 Fax: (604) 270-7638

Sansing Electronics Canada Inc.

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 Tel: (905) 242-2000 Fax: (905) 242-3415

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 Montreal, QC Tel: (514) 344-8454

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 Toll-free: (800) 469-8341 Fax: (905) 463-3048

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1860 E. Lake Ave. City of Industry, CA, USA 91704
 Tel: (916) 365-2400 Fax: (916) 365-2400

SCO Canada Inc.

135 West St. Suite 300 West York, Ontario, Ont. M6J 1A2
 Tel: (416) 332-1327 Fax: (416) 332-8837

SDMS Ltd.

41 75th Avenue East, Richmond B.C. V6V 1J8
 Tel: (604) 270-6757 Fax: (604) 270-6936

Branch Office:

Montreal, Que. Tel: (514) 343-1058 Fax: (514) 343-4602

Seamless Technology Inc.

41-67 67th Avenue, Richmond B.C. V6V 4N1
 Tel: (604) 272-5050 Fax: (604) 275-4179

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Technology Sector Stocks

Wall Street Highlights

by Thomas Klein

Technology stocks rebounded from July 17th lows and money flowed back into the "household" name technology companies. The trend of money flowing out of less established names and into the larger companies is due more to a late "bull" market cycle. When the market appears to be approaching a peak, money flows into more defensive companies. Fund managers do not want to be holding speculative investments when the future direction of the market is volatile. For the technology industry, this means that money flows to the well known, market leaders. In this market, even some of the big names that do not meet earnings estimates will be severely punished. Witness the 20% correction in Microsoft and Hewlett Packard, both companies disappointed with earnings forecasts and the market punished the stocks in one day. In nervous markets there is no price for unexpected news. For the short term this means that tech companies will be under very close scrutiny. Companies will have to exceed earnings and growth expectations and any shortcomings will be met with stock sell-offs. For younger companies that are in the development stage, available capital will be tighter. Many tech companies who want to be the purveyors of going public, are waiting for the IPO (initial public offering) market to improve. The dilemma is that many young companies need an infusion of cash to remain competitive. Unfortunately, the valuations for these companies are being revised downward which tends to place pressure on younger companies that have already gone public.

The flaw with the stock market is that it places traditional values and time constraints on tech companies. The reality is that Bill Gates could not forecast the potential of the internet, strategize the difficulty for Wall Street analysts. Expect volatility to remain in this industry, as long as analysts measure companies with quarterly performance and inaccurate growth forecasts. I think there has to be more value placed on management and the knowledge rate of the employees. In looking at the human resources of a company, a clearer picture of value can be achieved. Strategic alliances between companies in the industry is key in defining who the key players will be and in what direction they will be heading. Vision and the ability to react quickly to changing trends will be a key recipe for technology companies to survive and grow. The competitiveness of the industry dictates that there will be winners and losers.

I have broken down some of the sectors and highlighted some of Wall Street's projections. It is important for companies in the industry to grasp the perspective the market places on different high tech sectors. The market provides the investment dollars and therefore has a strong influence on the direction and success of the various components of the industry.

Computers, PCs and Peripherals

The PC industry is undergoing a fundamental structural change as PC companies compete for market share in an increasingly consolidatory like and rapidly consolidating market. The keys for companies to become successful

include increasing brand awareness, fixing key distribution deals and remaining price competitive while maintaining inventory turnaround time. For the balance of 1996, expect PC unit shipment growth to slow to 17% or about 68 million units worldwide. Reduced PC unit growth can be attributed to market saturation and sluggish global economies. In conjunction with slowing growth, the industry is experiencing intense downward price pressure. Aggressive pricing in the industry should continue as we are approaching the Christmas season and therefore expect gross margins to decline. Companies should maintain strict cost controls, increase productivity to implement the latest technology. Investments must be managed to ensure that demand is satisfied without creating excessive product.

Internet & Intranet

The word is getting out. Large corporations have realized the value of setting up an intranet and the word is integration. The internet internet is exploding on to the scene as companies are able to coordinate their internal information and databases better than they ever have before. The use of Web browser technology has proven that it can increase productivity and efficiency, thereby increasing profits. The demand for internetworking solutions will have the highest growth rate in the technology industry for the balance of 1996 and into 1997. Investors will reward companies that manage their growth and increase market share. Look for the market leaders to make calculated acquisitions in order to achieve market dominance.

Internet related companies exploded on to the market last year culminating with a plethora of high flying IPOs, most of which have fallen back to earth. Wall Street is maintaining a wary and watch attitude, with the majority of the interest gravitating towards companies providing infrastructure solutions. The market is looking for companies that can improve speed. The glaring lack of bandwidth imposes a lot of constraints on developing attractive content. Therefore, any solutions that are proven to increase speed would be handsomely rewarded. Security is the other major issue that concerns the financial viability of the internet. In order to capitalize on commercial applications of the net, advances in the security of information is vital. There are numerous companies that provide security solutions for the internet and intranet, but there are no clear market leaders. Investors are looking for a company to break-out and take a dominant position.

Computer Servers

Mainframe demand is in secular decline, but the markets have discounted this, hence this sector has been rated as stable with diminished growth prospects. Unix server

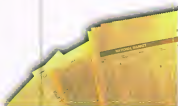
demand remains strong, particularly at enterprise server level. Spending on network-centric computing architectures continues to grow, fueling the demand for UNIX servers. The mainframe market has reached a point of saturation with the shift to CISC systems.

Semiconductors

Semiconductor stocks are expected to come under some pressure after the release of the July book to bill ratio. The number came in at .85 and .93 was expected. This figure indicates that semiconductor makers received \$85 in orders for every \$100 worth of chips they shipped. New chip orders in July were \$2.84 billion, down 3.1% from 2.96 billion in June and down 37.6% from July 1995 bookings of \$4.51 billion. The numbers might be a little deceiving, because of two factors: the falling prices for memory chips, particularly for DRAMS, and the usual summer weakness for sales. However, there does seem to be a lull in demand compared to this time last year. The lull in demand is not being seen by Wall Street as an indication that the sector is headed for recession, but rather they are counting on a promising 4th quarter.

Wall Street provides the investment capital but the reality is that the corporate use of technology will be the driving force of new products. Large corporations are looking for "killing apps" applications that will dramatically benefit the bottom line. They like to set the standards and this is where most of the technology battle will be won or lost. My suggestion to technology business owners and investors is to invest in products or companies that will catch the eye, and deep pockets of the corporate world. For researchers and operators, attempts to find out what the needs of large companies are and then find applications that can fill those requirements. **DDK**

Thomas Kleib is an investment executive from Scotia Mifent. He can be reached by e-mail: tomk@scotia.com



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could only buy relatively expensive AST Reason models aimed at the business market when they saw full colour class advertising similar appearing AST Advantage computers being sold cheaper—the school district replied that the Advantage models aimed at the home market, did not meet district standards.

Schools can purchase other models of computers—but they have to use their own funds to do so—money raised by parents, for example. But if they do this, the school district will not put those non-standard machines on district inventory so the individual school is responsible for insurance and maintenance. Some schools have chosen to buy a larger number of less-expensive machines that way while others have taken the more cautious route of spending more money to remain compatible with district standards.

Large enough companies may want to consider trying to get listed on the Provincial recommended hardware list that serves providing models for evaluation, by a set dead-

line District, for example, instead that deadline one year and as a result, was not listed for the following school year.

Smaller companies may want to approach individual schools, it can't hurt to talk to a school's principal, or to see if the school has a staff committee looking at hardware purchases. Be prepared to be frustrated—schools cannot spend Provincial government-provided funds on off-brand hardware, but they may be willing to discuss using so-called discretionary money—certainly not profits, or the results of other fundraising. You may be able to see what you're competing against—the Vancouver district, for example, tends a list of recommended hardware and prices out to schools, several times a year.

An added frustration for many companies will be the traditional Apple-centric attitude of many schools and districts. Apple has been quite successfully at courtship the education market, ever since the Apple II-days of the early 80s, with the result that many schools, particularly elementary schools, but in some

cases, whole school districts have standardized on Macintosh machines. Although Apple's recent financial problems are causing schools to look at this, PC-focused dealers will find themselves having to work extra hard to penetrate these school districts.

And if you do make a sale to a school, expect to provide a lot of support—remember few teachers are power users, and the machines are going to be used non-stop, by little sticky peanut-butter fingers. Factor the cost of that support into your price quote.

But if you are able to build a relationship with a school or a school district and if you are patient and supportive, they will prove a loyal market (and, as teachers and administrators circulate, they can make it easier to sell to other schools, as time goes on. **END**)

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